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Governor

DEPARTMENT OF CONSERVATION

Robert R. LaBonta
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Insect & Disease Lab 50 Hospital Street Augusta, ME 04330

December 22, 1987

Melvyn J. Weiss, Field Representative
Forest Pest Management
USDA Forest Service, S & PF
Northeastern Forest Experiment Station
Box 640
Durham, NH 03824

Dear Mel:

The information which you have requested on pest conditions for Maine for 1987 has been summarized on the attached sheets. As you will soon see in reading these over, conditions in Maine were rather unusual during the 1987 season. While many of the "traditional" pests either declined (i.e., spruce budworm and gypsy moth) or remained endemic at low levels (i.e., forest tent caterpillar and birch casebearer), others exhibited a great deal of variation. General statements about the 1987 conditions are difficult to formulate. As most of our comments are already included on the enclosed summaries, I will leave you to draw from them the information which you need. Should you require more information, please feel free to call. Our narrative summary of Maine conditions should be available early in January.

With best wishes for a joyous holiday season for you, your family and all of your staff.

Sincerely,

Richard G. Dearborn
for Tom Rumpf

RGD:bab
Enclosures

STATE OF MAINE

1987 PEST CONDITIONS REPORT WORK SHEET

PEST (COMMON NAME): Balsam poplar leaf miner

(SPECIFIC NAME): *Lyonetia* sp.

HOST: Balsam Poplar

PRESENT CONDITION:

AREA - TOTAL ACRES: 3,000 - 5,000 acres est.

LOCATION: T12 R11, T13 R11 and T14 R10 (Aroostook County)

SEVERITY - INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR INFECTION; DEFINE CLASSES: Heavy defoliation over several thousand acres. Infested trees turned rusty red in early June due to numerous small mines.

LOSSES - INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR $ ESTIMATES: In the past balsam poplar was not considered economically important but there seems to be increasing interest in this resource now for flakeboard and other products. There are many very large balsam poplar in Aroostook County.

TREND - CHANGES IN INCIDENCE AND SEVERITY OVER THE PAST FEW YEARS AND EXPECTATIONS FOR NEXT YEAR: The 1987 season was the second for this pest so far as we know. We are not sure what to expect in 1988.

CONTROL PROJECTS - METHOD, MATERIAL, ACRES, GOST, RESULTS:

ADDITIONAL COMMENTS: This species is being described as a new species.

1987 PEST CONDITIONS REPORT WORK SHEET

MAINE

PEST - (COMMON NAME): Beech Scale

(SPECIFIC NAME): Cryptococcus fagisuga

HOST: Beech

PRESENT CONDITION:

AREA - TOTAL ACRES: All beech stands.

LOCATION: Statewide

SEVERITY - INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR INFECTION; DEFINE CLASSES:

Infestation levels run from trace to heavy even within a single stand.

LOSSES - INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR $ ESTIMATES:

In general it appears that mortality from this species complex (scale + Nectria) seems to have stabilized somewhat although there are stands where mortality is increasing. Other factors such as oystershell have obviously had an impact too.

TREND - CHANGES IN INCIDENCE AND SEVERITY OVER THE PAST FEW YEARS AND EXPECTATIONS FOR NEXT YEAR:

The woolly scale on the bark seems to be more obvious in some areas than it has in the past. Although we have no accurate measure of scale populations they may be increasing slowly. Fortunately several levels of resistance have been observed as well.

CONTROL PROJECTS - METHOD, MATERIAL, ACRES, COST, RESULTS:

ADDITIONAL COMMENTS:

It appears that now may be the time to test various management practices such as thinning to enhance resistance within a stand.

1987 PEST CONDITIONS REPORT WORK SHEET

MAINE

PEST - (COMMON NAME): Birch Leaf Miners

(SPECIFIC NAME): Primarily Messa nana Populations of Fenusa pusilla were moderate but seemed to be mostly on gray birch. Profenusa thomsoni were very low in most areas in 1987.

HOST: All birches but this problem was especially striking in 1987 on white and white hybrid birches in woodland situations.

PRESENT CONDITION:

AREA - TOTAL ACRES: Throughout the range of the resource but probably heaviest across the central part of the State.

LOCATION: Statewide

SEVERITY - INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR INFECTION; DEFINE CLASSES:

Moderate (roughly less than 50% of leaf surface affected) throughout much of the State. Heavy (greater than 50% of the leaf surface affected) defoliation was observed on white birch in hilly areas of Waldo and Franklin Counties.

LOSSES - INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR $ ESTIMATES:

We are experiencing mortality of birch due to a number of causes throughout the State. It is difficult to determine a single cause. As this is the first year of heavy defoliation by this (Messa) species, it is doubtful if losses can yet be assessed.

TREND - CHANGES IN INCIDENCE AND SEVERITY OVER THE PAST FEW YEARS AND EXPECTATIONS FOR NEXT YEAR:

Populations of Messa rose strikingly in 1987 from low levels in 1986 and the trend for 1988 is not known at this time. The other leaf miners species stayed at roughly the same levels except for a possible slight decline for Profenusa.

CONTROL PROJECTS - METHOD, MATERIAL, ACRES, COST, RESULTS:

None except on ornamentals.

ADDITIONAL COMMENTS:

STATE OF MAINE

1987 PEST CONDITIONS REPORT WORK SHEET

PEST (COMMON NAME): Birch Casebearer

(SPECIFIC NAME): *Coleophora serratella*

HOST: White Birch

PRESENT CONDITION:

AREA - TOTAL ACRES: Difficult to determine. This species occurs throughout the State with local population flare-ups.

LOCATION: Northern 2/3 of Maine

SEVERITY - INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR INFECTION; DEFINE CLASSES: Average less than 5% defoliation. Only scattered spots of 25%+ defoliation. Heaviest in Trenton, Argyle and Whiting in Eastern Maine; even here average defoliation is less than 25%.

LOSSES - INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR $ ESTIMATES:
Increased top dieback and mortality in previously heavy defoliation (51-75%) areas - See attached sheets.

TREND - CHANGES IN INCIDENCE AND SEVERITY OVER THE PAST FEW YEARS AND EXPECTATIONS FOR NEXT YEAR: Populations stable and endemic for most of the State. Former infestations in the Rangeley Lakes area and eastern Washington Co. continue to decline. No appreciable defoliation anticipated for 1988. Will check overwintering populations.

CONTROL PROJECTS - METHOD, MATERIAL, ACRES, COST, RESULTS: None conducted or anticipated by the State. Local municipalities planned treatment in the Rangeley Lakes area for shade trees.

ADDITIONAL COMMENTS: See birch decline section

STATE OF MAINE

1987 PEST CONDITIONS REPORT WORK SHEET

PEST (COMMON NAME): Birch Dieback/Decline Syndrome

(SPECIFIC NAME):

HOST: White Birch

PRESENT CONDITION:

AREA - TOTAL ACRES: 230M gross acres

LOCATION: 193 M in Rangeley Lakes area & 37 M coastal Washington Co. - See Map.

SEVERITY - INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR INFECTION; DEFINE CLASSES: Had contiguous heavy (51-75%) defoliation in '83 (Rangeley) or '85 (Washington Co.). Adjacent monitored areas had only scattered heavy defoliation. The Rangeley area has had repeated scattered defoliation since the 1970's.

LOSSES - INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR $ ESTIMATES:

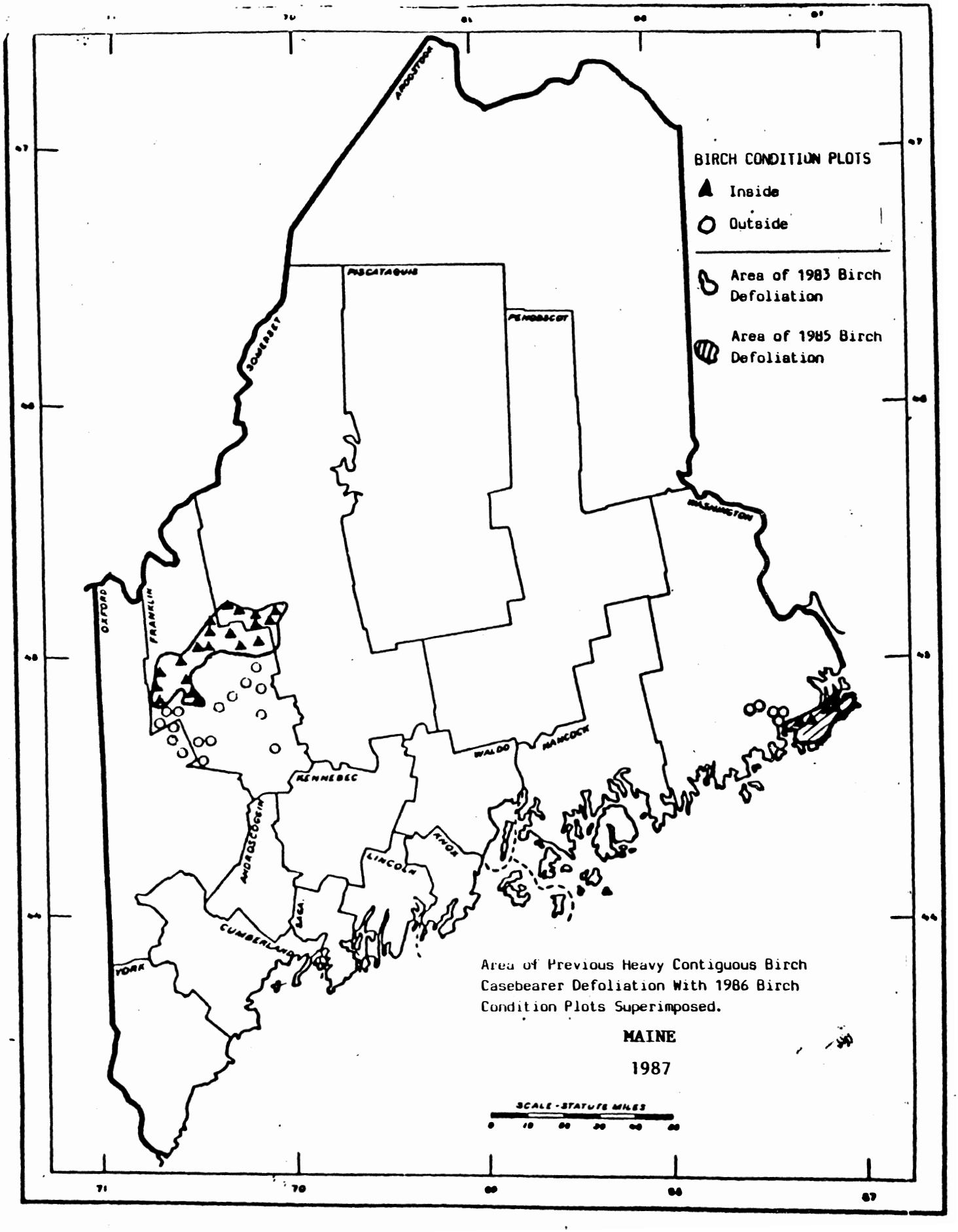
	Soft ba/acre:	Moribund	Dead	Moribund and Dead*
Rangeley	Inside	5.1	3.4	8.5
	Outside	0.8	1.5	2.3
Washington Co.	Inside	3.6	5.4	9.0
	Outside	0	0.4	0.4

* Anticipated dead

TREND - CHANGES IN INCIDENCE AND SEVERITY OVER THE PAST FEW YEARS AND EXPECTATIONS FOR NEXT YEAR: For both Rangeley Lakes area and Washington Co. area the decline syndrome peaked in 1986 both in and outside the defoliated area. Dieback has stabilized; although some current "dieback" trees are expected to further decline and die, no new dieback has been noted. Stands are generally recovering.

The occurrence of dieback simultaneously outside the birch casebearer defoliation may have been due to drouth and stand opening caused by virtual complete mortality of spruce/fir in mixed wood stands.

ADDITIONAL COMMENTS: Actual crown condition and stocking figures on attached sheet.



Area of Previous Heavy Contiguous Birch Casebearer Defoliation With 1986 Birch Condition Plots Superimposed.

MAINE

1987

Stocking and Crown Condition Data for White Birch Stands Surveyed in 1987. Comparative Annual Values

Rangeley Lakes Area

Attributes:	Area of Contiguous Heavy Defoliation - 1983			Area of Scattered Defoliation - 1983		
	1985	1986	1987	1985	1986	1987
Stocking						
Average total basal area	148	176	170	173	190	189
Average D/Co basal area	104	116	111	108	117	123
% of total basal area which is white birch	64%	65%	65%	55%	62%	52%
% of D/Co basal area which is white birch	76%	77%	77%	69%	73%	63%
Tree Condition of D/Co White Birch						
% basal area healthy	70%	50%	63%	93%	84%	87%
% basal area with top dieback	23%	44%	27%	5%	14%	10%
% basal area moribund	3%	3%	6%	0	1%	1%
% basal area dead or snags	4%	3%	4%	2%	1%	2%

Washington County

	Area of Contiguous Heavy Defoliation 1985		Area of Scattered Defoliation 1985	
Stocking				
Average total basal area	138	139	148	154
Average D/Co basal area	92	109	105	103
% of total basal area which is white birch	82%	80%	84%	79%
% of D/Co basal area which is white birch	86%	83%	86%	82%
Tree Condition of D/Co White Birch				
% basal area healthy	65%	68%	94%	98%
% basal area with top dieback	28%	22%	5%	1.5%
% basal area moribund	1%	4%	.5%	0
% basal area dead or snags	6%	6%	.5%	.5%

STATE OF MAINE

1987 PEST CONDITIONS REPORT WORK SHEET

PEST (COMMON NAME): Browntail Moth

(SPECIFIC NAME): *Euproctis chrysorrhoea*

HOST: Willow, Cherry, Roses, Rubus

PRESENT CONDITION:

AREA - TOTAL ACRES: 40+ acres known infestation

LOCATION: Casco Bay Islands - Long, Vaill, House

SEVERITY - INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR INFECTION; DEFINE CLASSES: Defoliation light (less than 25%) except on individual trees. Webs common on 40+ acres. Low level infestation could be much larger.

LOSSES - INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR $ ESTIMATES: No tree mortality noted or expected.

TREND - CHANGES IN INCIDENCE AND SEVERITY OVER THE PAST FEW YEARS AND EXPECTATIONS FOR NEXT YEAR: No specific survey conducted during 1987. Populations appear to be stable or increasing but to date, are still noticeable only on certain off-shore islands. Potential for escape to the mainland.

CONTROL PROJECTS - METHOD, MATERIAL, ACRES, COST, RESULTS: None in 1987.

ADDITIONAL COMMENTS: MFS anxiously awaiting formulation of browntail pheromone by APHIS. This would be a valuable survey tool.

STATE OF MAINE

1987 PEST CONDITIONS REPORT WORK SHEET

PEST (COMMON NAME): Christmas Tree Pests: Balsam Twig Aphid, Balsam Gall Midge, Spruce Budworm, Pales Weevil, and Pine Spittlebug.

(SPECIFIC NAME): *Mindarus abietinus, Paradiplosis tumifex, Choristoneura fumiferana, Hylobius pales,* and *Aphrophova parellela*

HOST: Balsam Fir

PRESENT CONDITION:

AREA - TOTAL ACRES: 5,000 acres (approximately)

LOCATION: Statewide

SEVERITY - INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR INFECTION; DEFINE CLASSES:
Mindarus - 100+ Acres
Paradiplosis - 10+ Acres
Choristoneura - 500 Acres
Hylobius pales - 10+ Acres
A. parallela - Spotty

LOSSES - INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR $ ESTIMATES:
Economic losses were high in 1987 due to degrade caused by these pests. Losses were in the range of $2-5,000.00 per heavily infested acre. Total losses could run as high as $250,000.00 for *Mindarus* alone.

TREND - CHANGES IN INCIDENCE AND SEVERITY OVER THE PAST FEW YEARS AND EXPECTATIONS FOR NEXT YEAR:
Mindarus - Increasing population levels
Paradiplosis - Increasing population levels
Choristoneura - Stable population levels
Hylobius and *Aphrophora* - These pests tend to be local and infrequent

CONTROL PROJECTS - METHOD, MATERIAL, ACRES, COST, RESULTS:
Choristoneura - Carbaryl or diazinon were applied aerially by growers over 500 acres in Hancock County at a cost of $5,000.00. Results were variable but most were acceptable.
Mindarus - Ground and aerial treatment with diazinon over 400+ acres at a cost of $4,000.00 had variable results.

ADDITIONAL COMMENTS:
Mindarus - MFS efficacy trials using fluvalinate aerially over 9 acres at a cost of $500.00 gave unacceptable control.

Paradiplosis - MFS efficacy ground trials using diazinon or chloropyrifos from the ground on 2 acres at a cost of $50.00 gave excellent control.

1987 PEST CONDITIONS REPORT WORK SHEET

MAINE

PEST - (COMMON NAME): Fall Cankerworm and Bruce Spanworm

(SPECIFIC NAME): Alsophila pometaria and Operophtera bruceata

HOST: Oak & Elm (A. pometaria) ; Sugar Maple, Poplar, etc. (O. bruceata)

PRESENT CONDITION:

AREA - TOTAL ACRES: Endemic populations

LOCATION: Statewide

SEVERITY - INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR INFECTION; DEFINE CLASSES:

None observed

LOSSES - INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR $ ESTIMATES:

None observed

TREND - CHANGES IN INCIDENCE AND SEVERITY OVER THE PAST FEW YEARS AND EXPECTATIONS FOR NEXT YEAR:

Populations generally remained at low levels in 1987 and although no increase has been detected for 1988, the trend for an upswing in populations is imminent.

CONTROL PROJECTS - METHOD, MATERIAL, ACRES, COST, RESULTS:

ADDITIONAL COMMENTS:

STATE OF MAINE

1987 PEST CONDITIONS REPORT WORK SHEET

PEST (COMMON NAME): Fir flagging

(SPECIFIC NAME): Cause variable

HOST: Balsam Fir

PRESENT CONDITION:

AREA - TOTAL ACRES: Scattered throughout the resource

LOCATION:

SEVERITY - INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR INFECTION; DEFINE CLASSES:

LOSSES - INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR $ ESTIMATES:

TREND - CHANGES IN INCIDENCE AND SEVERITY OVER THE PAST FEW YEARS AND EXPECTATIONS FOR NEXT YEAR:

CONTROL PROJECTS - METHOD, MATERIAL, ACRES, COST, RESULTS:

ADDITIONAL COMMENTS: Balsam fir throughout much of northern and eastern Maine exhibited varying amounts of scattered red flagging (dead branch tips) this season. Areas checked did not appear to show any consistent cause. In situations where extensive cutting had taken place there was a high incidence of feeding by sawyer beetles, *Monochamus* sp. In other areas no evidence of feeding was found. A similar condition reported in New Brunswick is being investigated. Fungi have also been associated with this condition in Canada.

STATE OF MAINE

1987 PEST CONDITIONS REPORT WORK SHEET

PEST (COMMON NAME): Forest Tent Caterpillar

(SPECIFIC NAME): *Malacosoma disstria*

HOST: Primarily Poplar

PRESENT CONDITION:

AREA - TOTAL ACRES: No known areas of noticeable defoliation in 1987

LOCATION:

SEVERITY - INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR INFECTION; DEFINE CLASSES:

LOSSES - INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR $ ESTIMATES: Stands stressed by previous outbreak have stabilized and recovered. 10% of the dominant/codominant poplar basal area was killed. Previous top dieback has been overgrown (i.e., crowns have recovered). Radial growth data has been collected from representative stands but has not yet been analyzed.

TREND - CHANGES IN INCIDENCE AND SEVERITY OVER THE PAST FEW YEARS AND EXPECTATIONS FOR NEXT YEAR: Based on light trap data, populations appear to be generally low and should remain so for 1988.

CONTROL PROJECTS - METHOD, MATERIAL, ACRES, COST, RESULTS: None

ADDITIONAL COMMENTS:

STATE OF MAINE

1987 PEST CONDITIONS REPORT WORK SHEET

PEST (COMMON NAME): Gypsy Moth

(SPECIFIC NAME): *Lymantria dispar*

HOST: Oak, Poplar, Birch

PRESENT CONDITION:

AREA - TOTAL ACRES: 849

LOCATION: Primarily east of Penobscot River, Penobscot, Hancock, Washington Counties. Some light defoliation in Kennebec County.

SEVERITY - INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR INFECTION; DEFINE CLASSES: Light < 30% = 201
Moderate 30-60 = 499
Heavy > 60% = 149

LOSSES - INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR $ ESTIMATES: 4% oak ba killed in areas with 1 yr. heavy defoliation. 16% oak ba killed in areas with 2+ yrs. heavy defoliation.

Losses from past outbreak have stabilized in southern Maine.

TREND - CHANGES IN INCIDENCE AND SEVERITY OVER THE PAST FEW YEARS AND EXPECTATIONS FOR NEXT YEAR: Populations subsiding in eastern Maine. In defoliated areas the populations are unhealthy and subsiding. In southern Maine endemic low level populations appear to be increasing but are still extremely low.

CONTROL PROJECTS - METHOD, MATERIAL, ACRES, COST, RESULTS: None conducted or planned.

ADDITIONAL COMMENTS: We are still trying to develop an efficient pheromone sampling protocol for the generally infested area.

MAINE
1987

Hardwood Decline

There has been a great deal of interest in reports of sugar maple (and other hardwood) decline from surrounding jurisdiction. The levels of damage reported vary, as do the various causes to which the damage is assigned. The MFS in co-operation with the USFS, is conducting a 1% CIR aerial survey of Oxford, Franklin and Somerset Counties. To determine the present hardwood crown condition the photography has been taken and interpretation is scheduled for this winter.

The survey area will be divided into cells in which forest condition is evaluated. Certain of the cells will be closely measured and then ground checked during the summer of 1988. On-ground conditions will be correlated with photo interpretation findings to validate the results.

While this survey by itself will not show cause or trends, it will provide a measure of present condition. This information can be used to judge the seriousness of the situation and will serve as a basis for future comparison. The final report is anticipated in 1989.

STATE OF MAINE

1987 PEST CONDITIONS REPORT WORK SHEET

PEST (COMMON NAME): Oak Leaftier

(SPECIFIC NAME): *Croesia semipurpurana*

HOST: Red Oak

PRESENT CONDITION:

AREA - TOTAL ACRES:

LOCATION: Southern half of the State

SEVERITY - INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR INFECTION; DEFINE CLASSES: Spotty with locally light to moderate defoliation.

LOSSES - INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR $ ESTIMATES:

Some tree mortality associated with areas previously defoliated by this species has been reported. It is difficult to establish a cause-effect relationship. Lincoln County seems to include most of the notable areas.

TREND - CHANGES IN INCIDENCE AND SEVERITY OVER THE PAST FEW YEARS AND EXPECTATIONS FOR NEXT YEAR: This species has been at low levels for several years now but appears to be increasing in numbers.

CONTROL PROJECTS - METHOD, MATERIAL, ACRES, COST, RESULTS: None

ADDITIONAL COMMENTS:

STATE OF MAINE

1987 PEST CONDITIONS REPORT WORK SHEET

PEST (COMMON NAME): Oystershell Scale

(SPECIFIC NAME): *Lepidosaphes ulmi*

HOST: Primarily Beech

PRESENT CONDITION:

AREA - TOTAL ACRES: Current and past damage/infestation noted on 100± twps.

LOCATION: Beech/Sugar Maple/Yellow Birch type - southern ½ of State.

SEVERITY - INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR INFECTION; DEFINE CLASSES: 5,000+ acres heavy-severe damage (overstory branch/top dieback, & understory mortality). Scale populations subsiding.

LOSSES - INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR $ ESTIMATES: Mortality of overstory minimal and associated with beech scale/Nectria. In heavily hit stands beech regeneration has been killed or severely stunted. Some yellow birch regeneration killed. Sugar Maple regeneration rapidly recovering from leader mortality and, where present, has increased dominance in the understory.

TREND - CHANGES IN INCIDENCE AND SEVERITY OVER THE PAST FEW YEARS AND EXPECTATIONS FOR NEXT YEAR: Infestation subsiding west of Penobscot River; older infestations in eastern Maine subsiding, but new active infestations noted through eastern areas.

CONTROL PROJECTS - METHOD, MATERIAL, ACRES, COST, RESULTS: No direct control. Land managing companies conducting salvage/pre-salvage in heaviest hit areas in Mayfield area.

ADDITIONAL COMMENTS: For those stands with a mixed Sugar Maple-Beech understory established it appears that heavy scale infestations favor dominance of the more valuable Sugar Maple. For stands of essentially pure beech understory this infestation has essentially destroyed the understory.

STATE OF MAINE

1987 PEST CONDITIONS REPORT WORK SHEET

PEST (COMMON NAME): Pine Leaf Aphid and Pine Fascicle Mite

(SPECIFIC NAME): *Pineus pinifoliae* and *Trisetacus alborum*

HOST: Eastern White Pine

PRESENT CONDITION:

AREA - TOTAL ACRES:

LOCATION: Statewide

SEVERITY - INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR INFECTION; DEFINE CLASSES: Eastern white pine showed moderate to severe flagging from the pine fascicle mite early in the season over a wide band across central Maine. Locally severe flagging and discoloration from the pine leaf aphid showed up on pine in November in many areas in the vicinity of red or black spruce.

LOSSES - INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR $ ESTIMATES:

TREND - CHANGES IN INCIDENCE AND SEVERITY OVER THE PAST FEW YEARS AND EXPECTATIONS FOR NEXT YEAR: Both pests showed striking population increases on pine in 1987 from previous levels. Damage from both pests may reach serious proportions in some areas of central and eastern Maine by June of 1988 and some pine mortality could occur on off sites.

CONTROL PROJECTS - METHOD, MATERIAL, ACRES, COST, RESULTS: None at this time

ADDITIONAL COMMENTS: This was the worst season for the mite that many of our staff have seen. The pine leaf aphid populations are at the highest level seen on pine since the 1950's.

STATE OF MAINE

1987 PEST CONDITIONS REPORT WORK SHEET

PEST (COMMON NAME): Pinewood Nematode

(SPECIFIC NAME): *Bursaphelenchus xylophilus*

HOST: Confirmed only from eastern white pine in Maine so far.

PRESENT CONDITION:

AREA - TOTAL ACRES: Not known at this time.

LOCATION: Positive findings from Baldwin, Casco, Whitefield and Albion (See map).

SEVERITY - INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR INFECTION; DEFINE CLASSES: None

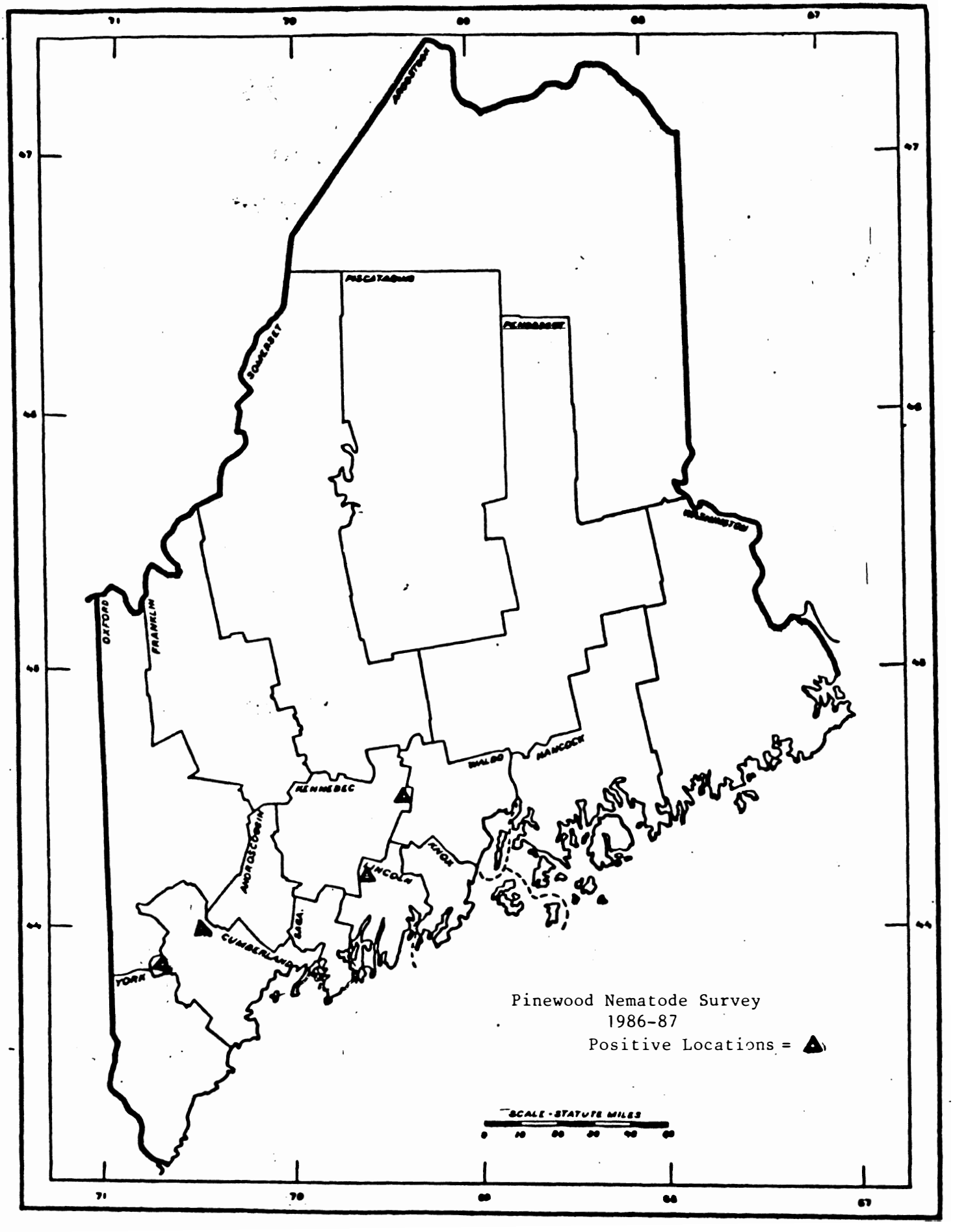
LOSSES - INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR $ ESTIMATES:
None

TREND - CHANGES IN INCIDENCE AND SEVERITY OVER THE PAST FEW YEARS AND EXPECTATIONS FOR NEXT YEAR: Survey procedures continue throughout the State from a variety of hosts as time permits.

CONTROL PROJECTS - METHOD, MATERIAL, ACRES, COST, RESULTS:

ADDITIONAL COMMENTS:

MAINE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PISCATAQUIS
PENOBSCOT
SOMERSET
WASHINGTON
OXFORD
FRANKLIN
HANCOCK
WALDO
KENNEBEC
ANDROSCOGGIN
KNOX
LINCOLN
SAGA.
CUMBERLAND
YORK
Pinewood Nematode Survey
1986-87
Positive Locations =
SCALE - STATUTE MILES
0
10
20
30
40
50

STATE OF MAINE

1987 PEST CONDITIONS REPORT WORK SHEET

PEST (COMMON NAME): Pests of Regeneration (Primarily conifers in plantation situations).

(SPECIFIC NAME): Misc. pests including: Mound Ants; *Cinara* spp.; *Hylobius congener*; Shoestring Root Rot; Fir-Fern Rust; Spruce Gall Adelgids; *Zeiraphera* spp.; *Mayetiola piceae*; Shoot Moths; White Pine Weevil (summarized elsewhere); White Pine Blister Rust (summarized elsewhere); porcupines and Pine Leaf Aphid and Pine Fascicle Mite (summarized elsewhere).

HOST: Various conifers

PRESENT CONDITION:

AREA - TOTAL ACRES:

LOCATION: Statewide

SEVERITY - INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR INFECTION; DEFINE CLASSES: Moderate to heavy damage by misc. pests in localized areas.

LOSSES - INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR $ ESTIMATES:

Growth loss resulting from *Zeiraphera*, spruce gall adelgids and *Mayetiola* are reaching significant levels.

TREND - CHANGES IN INCIDENCE AND SEVERITY OVER THE PAST FEW YEARS AND EXPECTATIONS FOR NEXT YEAR: Populations of several pests are reaching levels requiring control. They may become more significant with increased emphasis on both natural and artificial regeneration of commercial forests.

CONTROL PROJECTS - METHOD, MATERIAL, ACRES, COST, RESULTS: None.

ADDITIONAL COMMENTS: Plantations are monitored throughout the State. Currently no major pest species has been found causing widespread damage on conifers in plantations. Light to moderate damage levels can be observed on scattered trees in most areas and locally severe damage has been reported from some plantations. There is also evidence that some pests such as white pine blister rust may cause damage to natural and plantation regeneration that we have not yet been able to measure.

STATE OF MAINE

1987 PEST CONDITIONS REPORT WORK SHEET

PEST (COMMON NAME): Saratoga Spittlebug

(SPECIFIC NAME): *Aphrophora saratogensis*

HOST: Red Pine

PRESENT CONDITION:

AREA - TOTAL ACRES: 150 acres - only 2 plantations were surveyed. Other areas are likely to be infested.

LOCATION: T19 MD (100) and Hancock (50)

SEVERITY - INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR INFECTION; DEFINE CLASSES: Very heavy damage has occurred on the entire plantation in T19 MD. Nearly 100% of the trees have several flags and a high percentage have dead tops.

LOSSES - INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR $ ESTIMATES: The plantation manager and MFS entomologists generally consider the plantation a total loss. The owner estimates the loss of the plt. in T19 MD at more than $20,000.

TREND - CHANGES IN INCIDENCE AND SEVERITY OVER THE PAST FEW YEARS AND EXPECTATIONS FOR NEXT YEAR: Populations in plantations which have not experienced crown closure have been continuously high. Many other areas which have achieved closure have low population and little damage. Population in the T19 MD plantation is expected to be high in 1988.

CONTROL PROJECTS - METHOD, MATERIAL, ACRES, COST, RESULTS: No control was conducted in 1987. Control may be conducted in 1988.

ADDITIONAL COMMENTS:

1987 PEST CONDITIONS REPORT WORK SHEET

MAINE

PEST - (COMMON NAME): Spruce Beetle

(SPECIFIC NAME): Dedroctonus rufipennis

HOST: Spruce (primarily overmature white in areas checked)

PRESENT CONDITION:

AREA - TOTAL ACRES: 1500 acres ±

LOCATION: Primarily western Aroostook County (See map)

SEVERITY - INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR INFECTION; DEFINE CLASSES:

Most of the 1500 acres showed moderate to heavy infestation of large white spruce. Black-red spruce showed trace to light. Spots with isolated single to few tree infestations are fairly common on large white spruce along streams throughout the range of the resource in Maine.

LOSSES - INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR $ ESTIMATES:

Mortality of large white spruce may run as high as 75% or more in affected stands. Harvest is proceeding rapidly in these stands in Aroostook County which is minimizing losses.

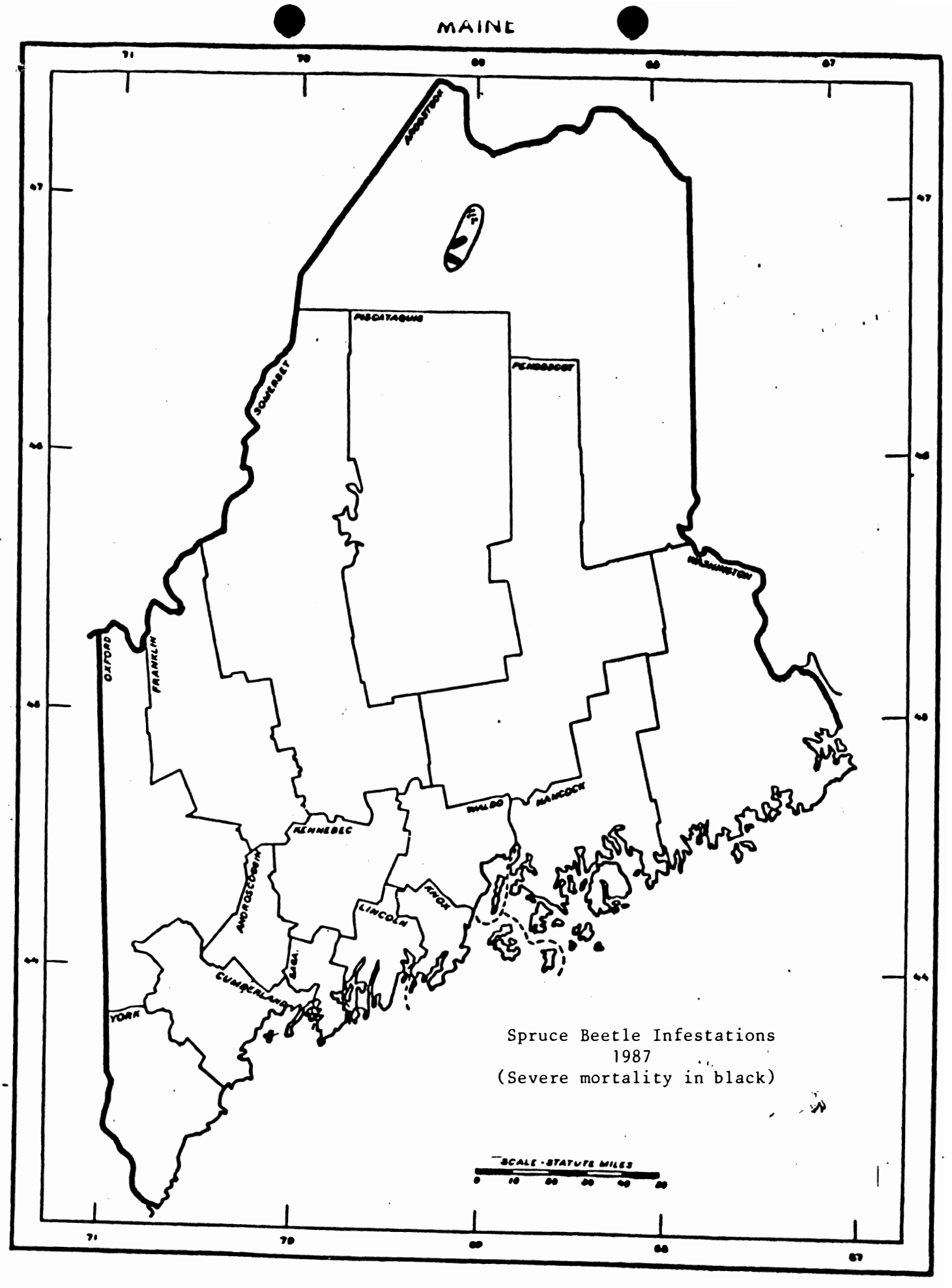
TREND - CHANGES IN INCIDENCE AND SEVERITY OVER THE PAST FEW YEARS AND EXPECTATIONS FOR NEXT YEAR:

Our concern at this time is how extensive these infestations may become on smaller and younger white spruce and on red and red-black spruce. We will be looking into this aspect more in 1988.

CONTROL PROJECTS - METHOD, MATERIAL, ACRES, COST, RESULTS:

Company harvest plans have so far been able to keep up with infestations and thus minimize losses.

ADDITIONAL COMMENTS:


MAINE
AROOSTOOK
PISCATAQUIS
PENOBSCOT
SOMERSET
WASHINGTON
OXFORD
FRANKLIN
HANCOCK
WALDO
KENNEBEC
ANDROSCOGGIN
KNOX
LINCOLN
SAGA.
CUMBERLAND
YORK
Spruce Beetle Infestations
1987
(Severe mortality in black)
SCALE - STATUTE MILES

MAINE

1987 PEST CONDITIONS REPORT WORK SHEET

PEST - (COMMON NAME): SPRUCE BUDWORM

(SPECIFIC NAME): Choristoneura fumiferana

HOST: Balsam Fir, Red Spruce, White Spruce, Black Spruce, Hemlock

PRESENT CONDITION:

AREA - TOTAL ACRES: 250,000 acres

LOCATION: Southeastern Maine, Hancock and Washington Co.

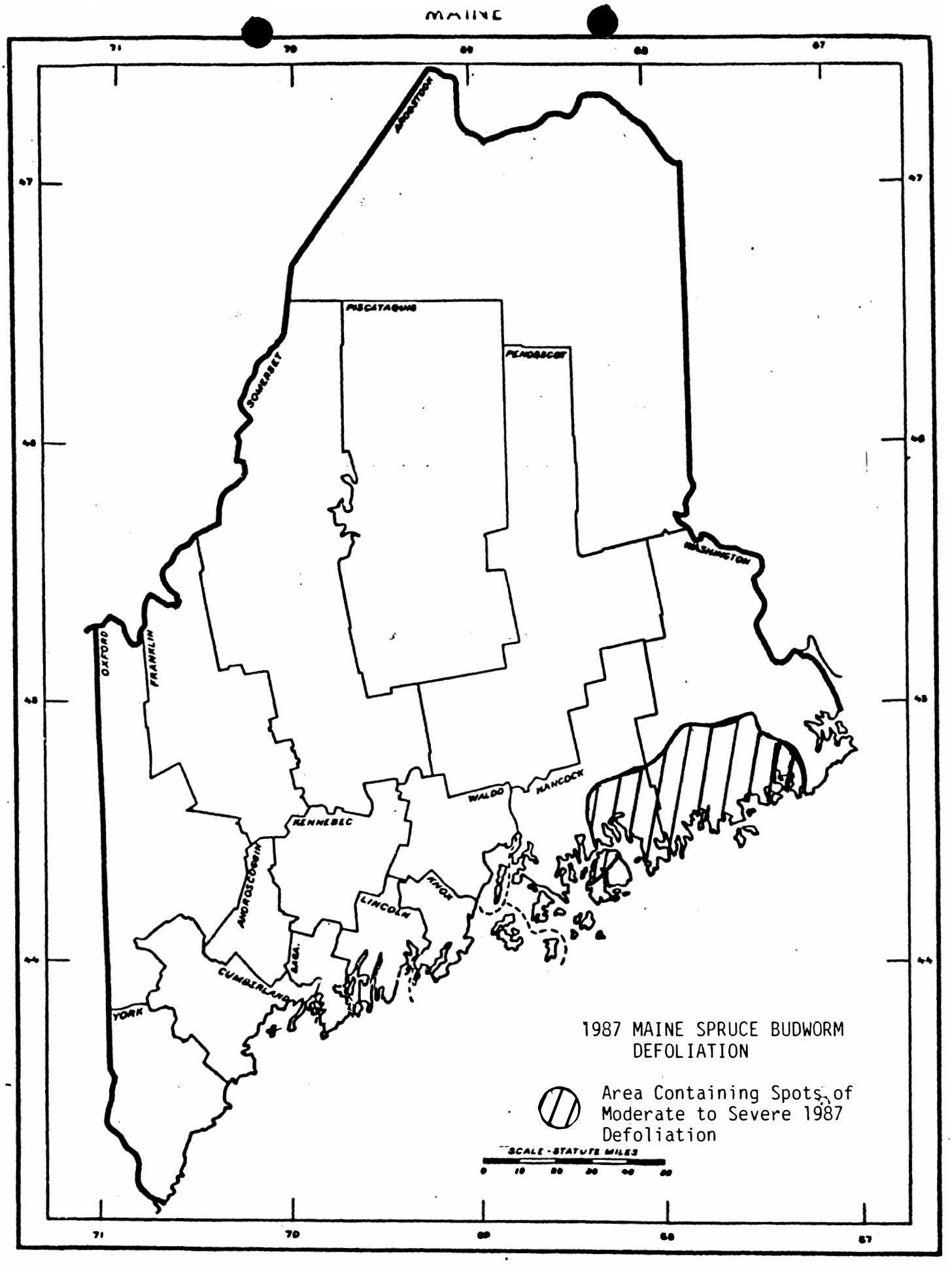
SEVERITY - INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR INFECTION: DEFINE CLASSES:
210,000 acres-Moderate to severe (31 to 100% current defoliation)
40,000 acres-Light (<30% current defoliation)

LOSSES - INCLUDE AREAS OF TREE MORTALITY: ALSO VOLUME AND/OR $ ESTIMATES: Apparently 300,000 acres of host mortality has occurred, scattered throughout the state. The trees contain 80% or more fir mortality, 10 to 60% spruce mortality. Mortality in sprayed areas evaluated in 1987 was about 10 to 20% of fir and little or no spruce.

TREND - CHANGES IN INCIDENCE AND SEVERITY OVER THE PAST FEW YEARS AND EXPECTATIONS FOR NEXT YEAR: The trend in budworm population has been sharply downward for several years. The population has collapsed in all but southeastern Maine. Population are declining in the southeast and are predicted to be lower in 1988.

CONTROL PROJECTS - METHOD, MATERIAL, ACRES, COST, RESULTS: No control or experimental projects were conducted in Maine in 1987.

ADDITIONAL COMMENTS: Budworm populations in Maine are the lowest since the late 60's. Northern populations are so low that even pheromone traps were unable to catch moths. Most observers feel that the population in the southeast will also collapse and that budworm will be endemic for many years. Host trees that were protected through the outbreak or survived for other reasons are showing marked recovery.


MAINE
AROOSTOOK
PISCATAQUIS
PENOBSCOT
SOMERSET
WASHINGTON
OXFORD
FRANKLIN
WALDO
HANCOCK
KENNEBEC
ANDROSCOGGIN
KNOX
LINCOLN
SAG.
CUMBERLAND
YORK
1987 MAINE SPRUCE BUDWORM DEFOLIATION
Area Containing Spots of Moderate to Severe 1987 Defoliation
SCALE - STATUTE MILES

MAINE

1987 PEST CONDITIONS REPORT WORK SHEET

PEST - (COMMON NAME): STILWELL'S SYNDROME

(SPECIFIC NAME):

HOST: Balsam Fir

PRESENT CONDITION:

AREA - TOTAL ACRES: Scattered individual trees

LOCATION: Scattered through the entire spruce-fir region of Maine which was heavily damaged by spruce budworm.

SEVERITY - INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR INFECTION: DEFINE CLASSES: Individual tree mortality. Usually less than 1% of surviving fir trees per year. May be as high as 5% in peak years in small areas.

LOSSES - INCLUDE AREAS OF TREE MORTALITY: ALSO VOLUME AND/OR $ ESTIMATES: Usually less than 1% of surviving fir stems per year.

TREND - CHANGES IN INCIDENCE AND SEVERITY OVER THE PAST FEW YEARS AND EXPECTATIONS FOR NEXT YEAR: Less apparent in 1987 than it had been in 1985 or 1986.

CONTROL PROJECTS - METHOD, MATERIAL, ACRES, COST, RESULTS: None

ADDITIONAL COMMENTS: Heaviest in areas of fir mortality directly attributed to budworm defoliation. Damage seems to be proportional to the stress from budworm damage . Stilwell's seems more apparent during wet years. All trees evaluated to date have been infected with Armillaria mellea.

1987 PEST CONDITIONS REPORT WORK SHEET

MAINE

PEST - (COMMON NAME): Variable Oakleaf Caterpillar, Maple Prominant, etc.

(SPECIFIC NAME): Heterocampa manteo, Symmerista leucitys, etc.

HOST: Primarily beech in 1987

PRESENT CONDITION:

AREA - TOTAL ACRES: Spotty infestations - often only single trees defoliated.

LOCATION: Nearly all of the State except for Aroostook (northern) and York, Cumberland and Sagadahoc(southern) Counties.

SEVERITY - INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR INFECTION; DEFINE CLASSES:

Generally noted throughout the area but very spotty.

LOSSES - INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR $ ESTIMATES:

None observed

TREND - CHANGES IN INCIDENCE AND SEVERITY OVER THE PAST FEW YEARS AND EXPECTATIONS FOR NEXT YEAR:

After scattered reports of larvae in 1986 we were surprised to observe what appears to be startling increases in numbers in 1987. There appeared to be healthy populations of prepupae (H. manteo) and pupae (S. leucitys) going into the winter in many areas. We are not sure what to expect in 1988.

CONTROL PROJECTS - METHOD, MATERIAL, ACRES, COST, RESULTS:

None

ADDITIONAL COMMENTS: This complex involving at least six (6) other species occurred together and was somewhat of a surprise. What was even more surprising to us was that oak in the stands did not seem to be affected by H. manteo nor was maple affected to any degree by S. leucitys. Beech was the primary host. As most larvae were feeding in September the significance of any impact is questioned. The lateness of this "outbreak" was after our regular survey season and has caused us to reassess the need for more fall surveys. The significance of this complex will determine the need for late surveys in 1988.

MAINE

1987 PEST CONDITIONS REPORT WORK SHEET

PEST - (COMMON NAME): White Pine Weevil

(SPECIFIC NAME): Pissodes strobi (Peck)

HOST: White Pine and spruces

PRESENT CONDITION:

AREA - TOTAL ACRES:

LOCATION: Statewide

SEVERITY - INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR INFECTION; DEFINE CLASSES:

Heavy stem deformation (40%) is found in most uncontrolled stands established for 10 years or longer. Acreage figures are unavailable.

LOSSES - INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR $ ESTIMATES:

Very high dollar losses result from this pest because potentially high value sawlogs are reduced to pulpwood grades.

TREND - CHANGES IN INCIDENCE AND SEVERITY OVER THE PAST FEW YEARS AND EXPECTATIONS FOR NEXT YEAR:

Damage reuslting from weevil attack range from 10-40% in infested stands and are expected to remain at high levels.

CONTROL PROJECTS - METHOD, MATERIAL, ACRES, COST, RESULTS:

Ground control, Lindane or Metasystox®, ~ 400 95% control MFS efficacy trial 1987 aerial application, fluvalinate, 9 acres, $500.00 damage was significantly reduced, however control was only 76%

ADDITIONAL COMMENTS:

STATE OF MAINE

1987 PEST CONDITIONS REPORT WORK SHEET

PEST (COMMON NAME): Annosum Root and Butt Rot

(SPECIFIC NAME): *Heterobasidion annosum*

HOST: 1987 Hosts are red and white pine

PRESENT CONDITION: Three new infection sites in 1987

AREA - TOTAL ACRES: 5 Acres in 1987

LOCATION: Chesterville (Franklin Co.), Belgrade (Kennebec Co.) & Searsmont (Waldo Co.)

SEVERITY - INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR INFECTION; DEFINE CLASSES: Light in Belgrade; moderate in Chesterville and Searsmont.
Light = A single "hole"; less than 10 trees symptomatic.
Moderate = Several "holes"; less than 1 acre symptomatic.
Heavy = Several "holes"; more than 1 acre symptomatic.

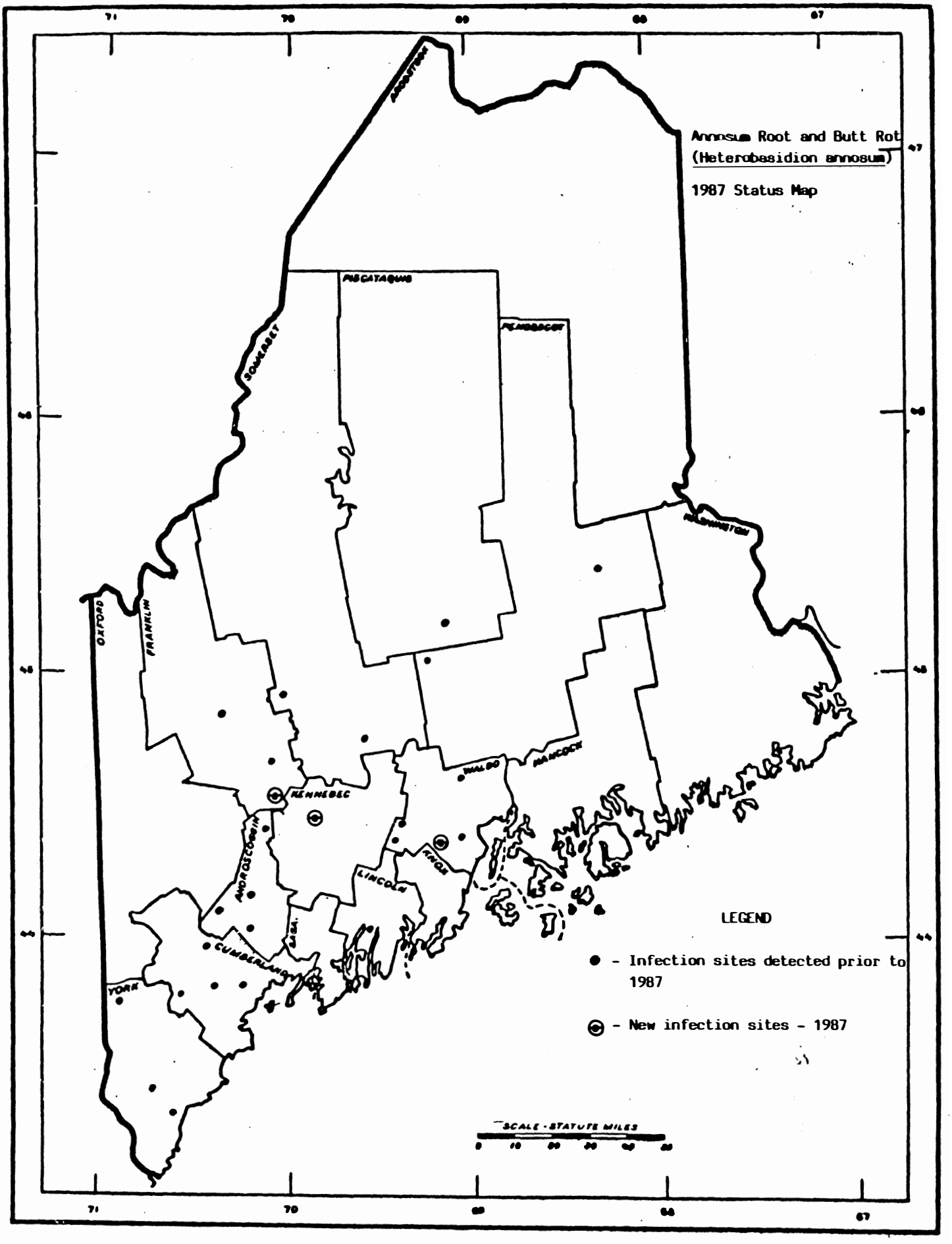
LOSSES - INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR $ ESTIMATES: For 1987, approximately 50 cds. of tree mortality, some of which may be salvaged. Extra loss is growth loss, loss of desirable stocking, and cost to practice Borax stump treatment (not done on any of the three sites listed).

TREND - CHANGES IN INCIDENCE AND SEVERITY OVER THE PAST FEW YEARS AND EXPECTATIONS FOR NEXT YEAR: Incidence is increasing in spite of no new sites reported last year. As first and second thinnings increase, incidence will increase, unless there is greater support for stump treatment than in the past. Severity is expected to increase in established sites.

CONTROL PROJECTS - METHOD, MATERIAL, ACRES, COST, RESULTS: We are still recommending Borax stump treatment at time of felling, but compliance with this recommendation appears to be low.

ADDITIONAL COMMENTS: What do you recommend for treatment in a feller-buncher-skidder-chipper operation? Manual application of Borax in this kind of operation is extremely dangerous, and not recommended in Maine. Also, in such an operation, where stumps are low and soil is dragged over stump surfaces, how susceptible are such stumps to infection by Annosum Root and Butt Rot?

MAINE


Annosum Root and Butt Rot
(Heterobasidion annosum)
1987 Status Map
AROOSTOOK
PISCATAQUIS
PENOBSCOT
SOMERSET
WASHINGTON
OXFORD
FRANKLIN
HANCOCK
WALDO
KENNEBEC
KNOX
LINCOLN
ANDROSCOGGIN
SAG.
CUMBERLAND
YORK
LEGEND
● - Infection sites detected prior to 1987
⊕ - New infection sites - 1987
SCALE - STATUTE MILES

STATE OF MAINE

1987 PEST CONDITIONS REPORT WORK SHEET

PEST (COMMON NAME): Ash Leaf Rust

(SPECIFIC NAME): *Puccinia sparganioides*

HOST: Ash spp.

PRESENT CONDITION:

AREA - TOTAL ACRES: 70 acres observed.

LOCATION: Cumberland Foreside, Cumberland, Yarmouth, Cousin's Is. (Cumberland Co.), Arrowsic and Woolwich (Sagadahoc Co.), and Alna (Lincoln Co.)

SEVERITY - INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR INFECTION; DEFINE CLASSES: All areas have trace to light, except for an occasional tree (rare) with a heavy infestation.
Light = Not all leaflets contain aecial pustules.
Moderate = Most leaflets contain up to 5 aecial pustules.
Heavy = All leaflets with more than 5 aecial pustules; succulent twigs and petioles also infected.

LOSSES - INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR $ ESTIMATES: In the Yarmouth and Cumberland Foreside areas, extensive mortality and dieback has occurred from the past epidemic situation. Many living but stag-headed trees have been removed. Extensive mortality has also occurred in the Arrowsic area.

TREND - CHANGES IN INCIDENCE AND SEVERITY OVER THE PAST FEW YEARS AND EXPECTATIONS FOR NEXT YEAR: The epidemic situation is now entering the endemic situation, although heavy telial sori were observed on salt marsh grass in the Scarborough-Cape Elizabeth area. Stag-headed trees have developed epicormic sprouts, and are developing a new crown.

CONTROL PROJECTS - METHOD, MATERIAL, ACRES, COST, RESULTS: Salvage of dead and moribund trees is still taking place.

ADDITIONAL COMMENTS: There is no practical, economical effective means for controlling this disease at the present time except for possible fungicidal spraying of accessible trees. Burning of infected salt marsh grass is not a viable option.

STATE OF MAINE

1987 PEST CONDITIONS REPORT WORK SHEET

PEST (COMMON NAME): Atropellis Canker

(SPECIFIC NAME): *Atropellis tingens*

HOST: Scots pine, pitch pine

PRESENT CONDITION:

AREA - TOTAL ACRES: 8

LOCATION: Townships of Fryeburg, Denmark, Brownfield (Oxford Co.) and Newfield, Shapleigh and Waterboro (York Co.).

SEVERITY - INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR INFECTION; DEFINE CLASSES: Moderate to heavy infection in Brownfield, Newfield, Shapleigh and Waterboro; light in Denmark and Fryeburg.
Light = Occasional flagged branches in lower crown.
Moderate = Many flagged branches in lower crown; occasional ones in upper crown.
Heavy = Many flagged branches throughout crown; some stem cankers.

LOSSES - INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR $ ESTIMATES: No tree mortality has yet occurred; however, in the worst case situation (Brownfield) approximately 3 acres of 5-8 ft. Scots pine are unmerchantible for the Christmas tree trade. (Average 6' tree; 2,000 trees @ $2.00/foot = $24,000).

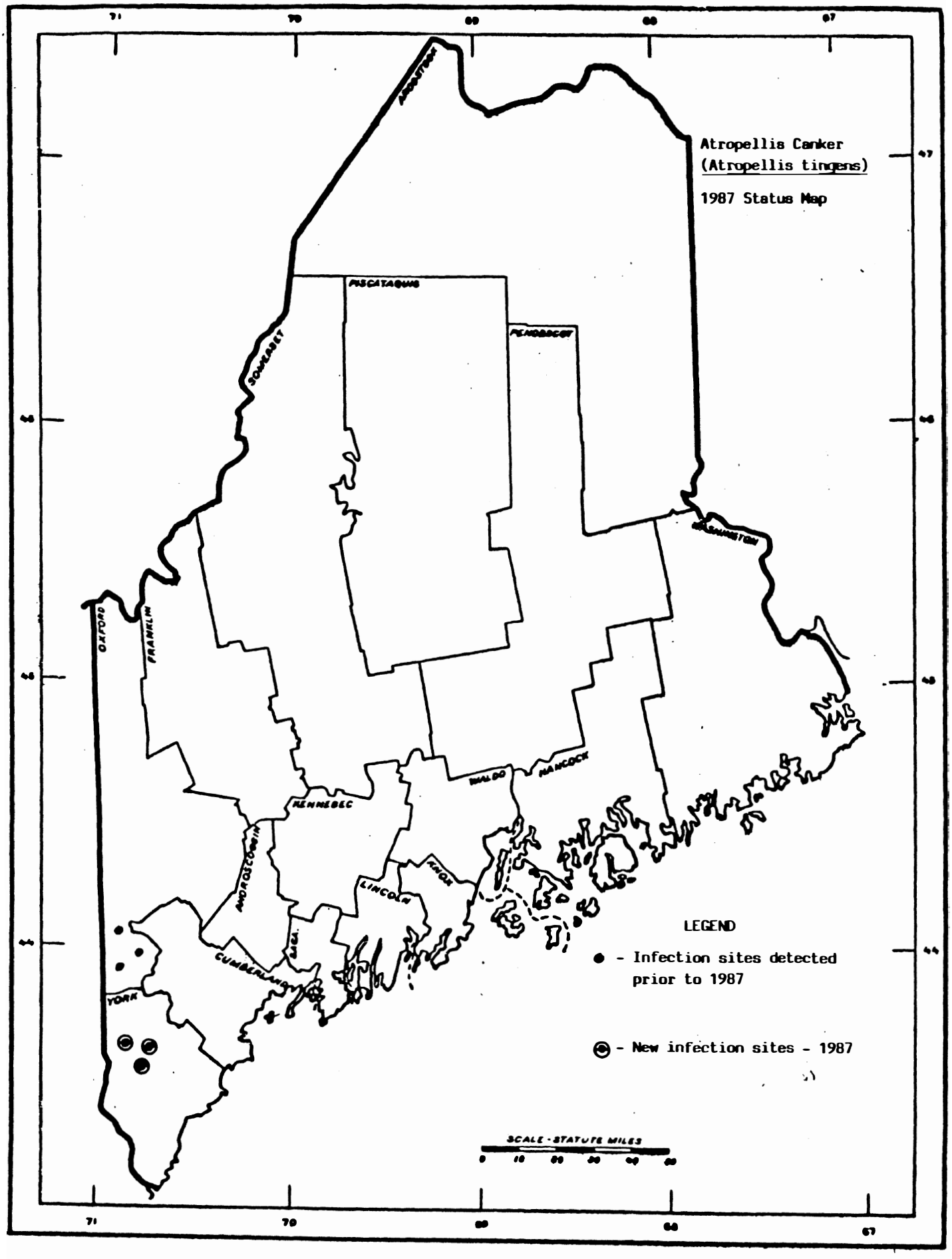
TREND - CHANGES IN INCIDENCE AND SEVERITY OVER THE PAST FEW YEARS AND EXPECTATIONS FOR NEXT YEAR: Three new townships were added this year (Newfield, Shapleigh and Waterboro). In 1985, only one pitch pine was found infected in Fryeburg; in 1987, it was easily detected on this species on this same site. Additional townships are expected to be added in 1988, and severity is expected to increase without application of sanitation measures.

CONTROL PROJECTS - METHOD, MATERIAL, ACRES, COST, RESULTS: Sanitation measures practiced at sites in Fryeburg and Denmark appears to have reduced and stabilized infection.

ADDITIONAL COMMENTS: Christmas tree growers of Scots pine should be aware of this problem. Since the black apothecia on flagged branches are easily detected, early sanitation effort should enable affected growers to keep this problem under control.

Verification is also easy. Place the apothecia in 5% KOH. The liquid immediately assumes a brilliant blue-green color when shaken.

MAINE


Atropellis Canker
(Atropellis tingens)
1987 Status Map
AROOSTOOK
PISCATAQUIS
PENOBSCOT
SOMERSET
WASHINGTON
OXFORD
FRANKLIN
KENNEBEC
WALDO
HANCOCK
ANDROSCOGGIN
LINCOLN
KNOX
CUMBERLAND
YORK
LEGEND
● - Infection sites detected prior to 1987
⊕ - New infection sites - 1987
SCALE - STATUTE MILES
0 10 20 30 40 50

STATE OF MAINE

1987 PEST CONDITIONS REPORT WORK SHEET

PEST (COMMON NAME): Beech Bark Disease

(SPECIFIC NAME): *Nectria coccinea* var. *faginata*

HOST: American Beecn

PRESENT CONDITION:

AREA - TOTAL ACRES: Undetermined

LOCATION: Wherever beech occurs

SEVERITY - INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR INFECTION; DEFINE CLASSES: Variable within individual stands. We do not have a good handle on this right now. It deserves more attention than it is getting.
Light = Occasional, localized sunken cankers on lower 8' of bole.
Moderate = Up to 50% of bark surface with sunken cankers.
Heavy = Cankers coalesce; over 50% of lower 8' of bole affected with sunken cankers.
LOSSES - INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR $ ESTIMATES:
Mostly degrade; little mortality presently.

TREND - CHANGES IN INCIDENCE AND SEVERITY OVER THE PAST FEW YEARS AND EXPECTATIONS FOR NEXT YEAR: If increased incidence of the scale is any indication, we might expect an increase in incidence of Nectria-caused cankers especially trees around 10" Dbh and larger. With increased severity, some mortality is expected to show up.

CONTROL PROJECTS - METHOD, MATERIAL, ACRES, COST, RESULTS: None

ADDITIONAL COMMENTS: Survey work has been mostly observational. My impression is that the complex is once again building; especially those of merchantible size.

STATE OF MAINE

1987 PEST CONDITIONS REPORT WORK SHEET

PEST (COMMON NAME): Diplodia Tip Blight (Sphaeropsis Blight)

(SPECIFIC NAME): *Sphaeropsis sapinea = Sphaeropsis ellisii = Diplodia pinea*

HOST: Pitch Pine

PRESENT CONDITION:

AREA - TOTAL ACRES: 10

LOCATION: Windham

SEVERITY - INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR INFECTION; DEFINE CLASSES: Heavy infection

Light = Scattered, occasional flags
Moderate = Up to 50% of twigs flagged.
Heavy = Most twigs flagged (over 50%)

LOSSES - INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR $ ESTIMATES:
No mortality yet occurring. Trees are 20-25' high and 6-8" Dbh.

TREND - CHANGES IN INCIDENCE AND SEVERITY OVER THE PAST FEW YEARS AND EXPECTATIONS FOR NEXT YEAR: This is the first time this disease has been observed on this host with a heavy infestation. The infestation in Windham will undoubtedly increase in severity. Expect low incidence elsewhere next year.

CONTROL PROJECTS - METHOD, MATERIAL, ACRES, COST, RESULTS: None known

ADDITIONAL COMMENTS: None

STATE OF MAINE

1987 PEST CONDITIONS REPORT WORK SHEET

PEST (COMMON NAME): Eastern Dwarf Mistletoe

(SPECIFIC NAME): *Arceuthobium pusillum*

HOST: White and red spruce

PRESENT CONDITION:

AREA - TOTAL ACRES: 1,100 (estimated)

LOCATION: Monhegan Island, McGee and Barter Islands (Port Clyde), Marsh Island (Round Pond), Linekin Neck (E. Boothbay) and Squirrel Island (Southport).

SEVERITY - INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR INFECTION; DEFINE CLASSES: Severe on Monhegan Island; heavy on McGee, Barter, Marsh and Squirrel Islands, and Linekin Neck.
Light = Up to 2 brooms per overstory tree; reproduction mostly uninfected.
Moderate = 1/8-1/4 of crown affected (broomed); reproduction with light infection.
Heavy = More than 1/4 of crown affected; moderate infection on reproduction, tops of mature trees dying.
Severe = Entire crown with heavy brooming, considerable mortality, reproduction heavily broomed.

LOSSES - INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR $ ESTIMATES: 100 acres @ 20 cds./A = 2,000 cds. or 1mm Bd. ft. The need to "beef-up" the fire equipment to cope with the increased fire hazard is an added cost.

TREND - CHANGES IN INCIDENCE AND SEVERITY OVER THE PAST FEW YEARS AND EXPECTATIONS FOR NEXT YEAR: Reproduction and mature trees becoming severely affected. Mortality is expected to increase drastically in those areas currently with heavy infection. Heavy infection of reproduction will practically eliminate the potential for mature white spruce stands to exist in the future. Red spruce will be infected, but to a much lesser degree.

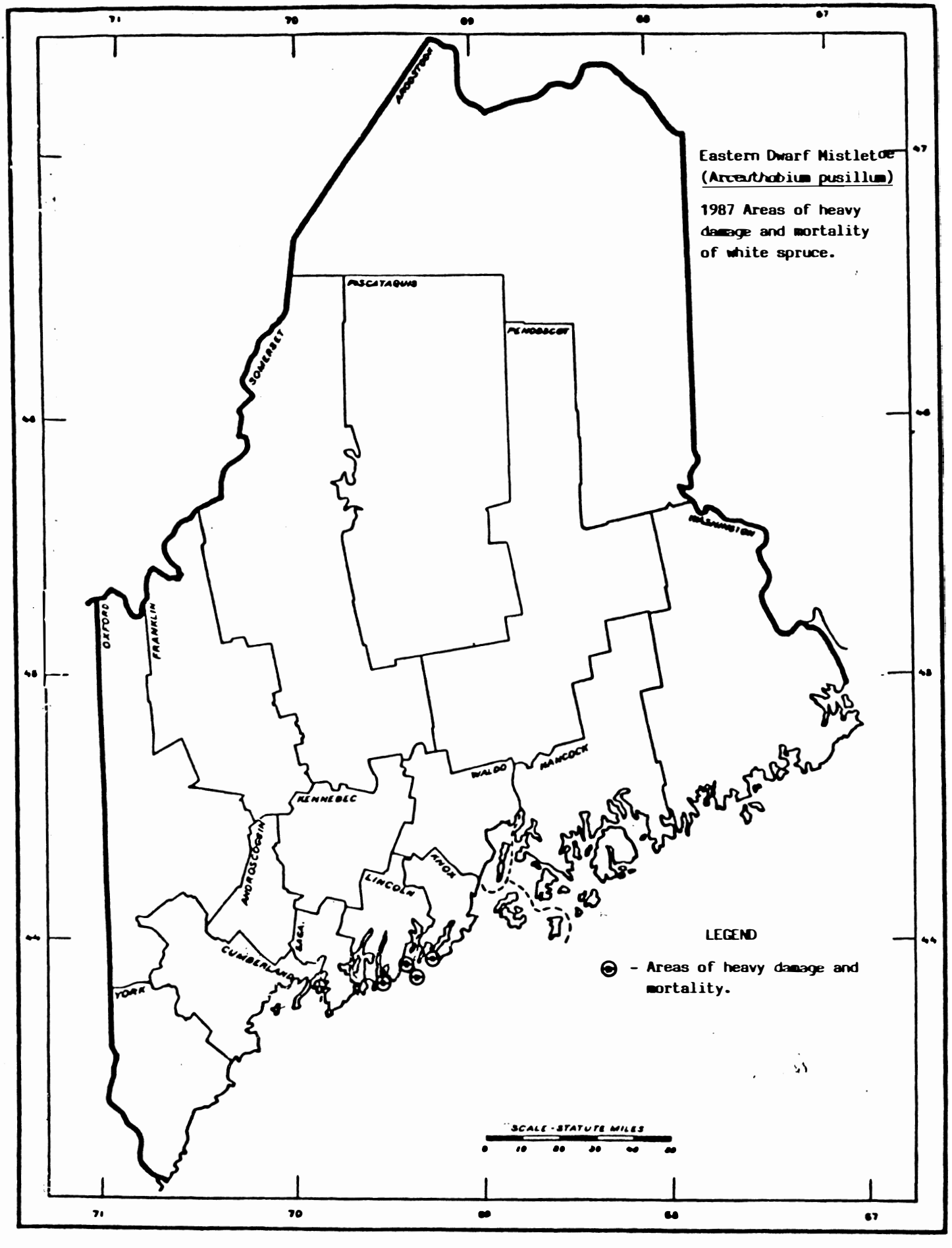
CONTROL PROJECTS - METHOD, MATERIAL, ACRES, COST, RESULTS: The main thrust on the islands is to protect buildings from fire danger caused by dead, heavily-broomed trees next to them, and felling dead snags to reduce the danger of lightning starting a severe conflagration.

ADDITIONAL COMMENTS: The problem is complicated by two factors: salvage is difficult because of the difficulty in bringing such equipment (chippers, portable saws) onto the islands, plus the desire by many island residents to leave the islands in their natural state, insofar as is possible.

Inland black spruce in bog situations is also affected, and may be heavily broomed, but little mortality has been observed.

Initial infection was probably by birds carrying mistletoe seed (Monhegan Is.) since it is 10 miles from the mainland.

MAINE


Eastern Dwarf Mistletoe
(Arceuthobium pusillum)
1987 Areas of heavy damage and mortality of white spruce.
AROOSTOOK
PISCATAQUIS
PENOBSCOT
SOMERSET
WASHINGTON
OXFORD
FRANKLIN
KENNEBEC
WALDO
HANCOCK
ANDROSCOGGIN
KNOX
LINCOLN
SAG.
CUMBERLAND
YORK
LEGEND
- Areas of heavy damage and mortality.
SCALE - STATUTE MILES
0 10 20 30 40 50
71
70
69
68
67
47
46
45
44

1987 PEST CONDITIONS REPORT WORK SHEET

MAINE

PEST - (COMMON NAME): European Larch Canker

(SPECIFIC NAME): (Lachnellula willkommii)

HOST: Eastern Larch

PRESENT CONDITION: State and Federal Quarantine on wood shipments.

AREA - TOTAL ACRES: 6,480 (approximate)

LOCATION: Knox, Lincoln, Waldo, and Washington, Hancock counties, partially

SEVERITY - INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR INFECTION; DEFINE CLASSES: At the two epicenters,(Cutler-Jonesboro and Friendship) infection is heavy (stem cankers and more than one canker per branch). Infection light to moderate elsewhere (occasional cankers on branches and generally no stem cankers).

LOSSES - INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR $ ESTIMATES: No mature tree loss so far observed. Only sapling - pole sized tree mortality. There is another loss involved. That is loss of stumpage sales. Scott and I.P. will not allow suppliers to ship from uninspected sites within the quarantined area.

TREND - CHANGES IN INCIDENCE AND SEVERITY OVER THE PAST FEW YEARS AND EXPECTATIONS FOR NEXT YEAR: The disease was introduced sometime around 1969 into the area of the two current epicenters. In 18 years it has spread to the currently infested area, (mostly confined to the coast).

A gradual spread along the coast westward into the Bar Harbor area, and a spread to the east from Camden.Trunk cankers on larger trees will degrade them.

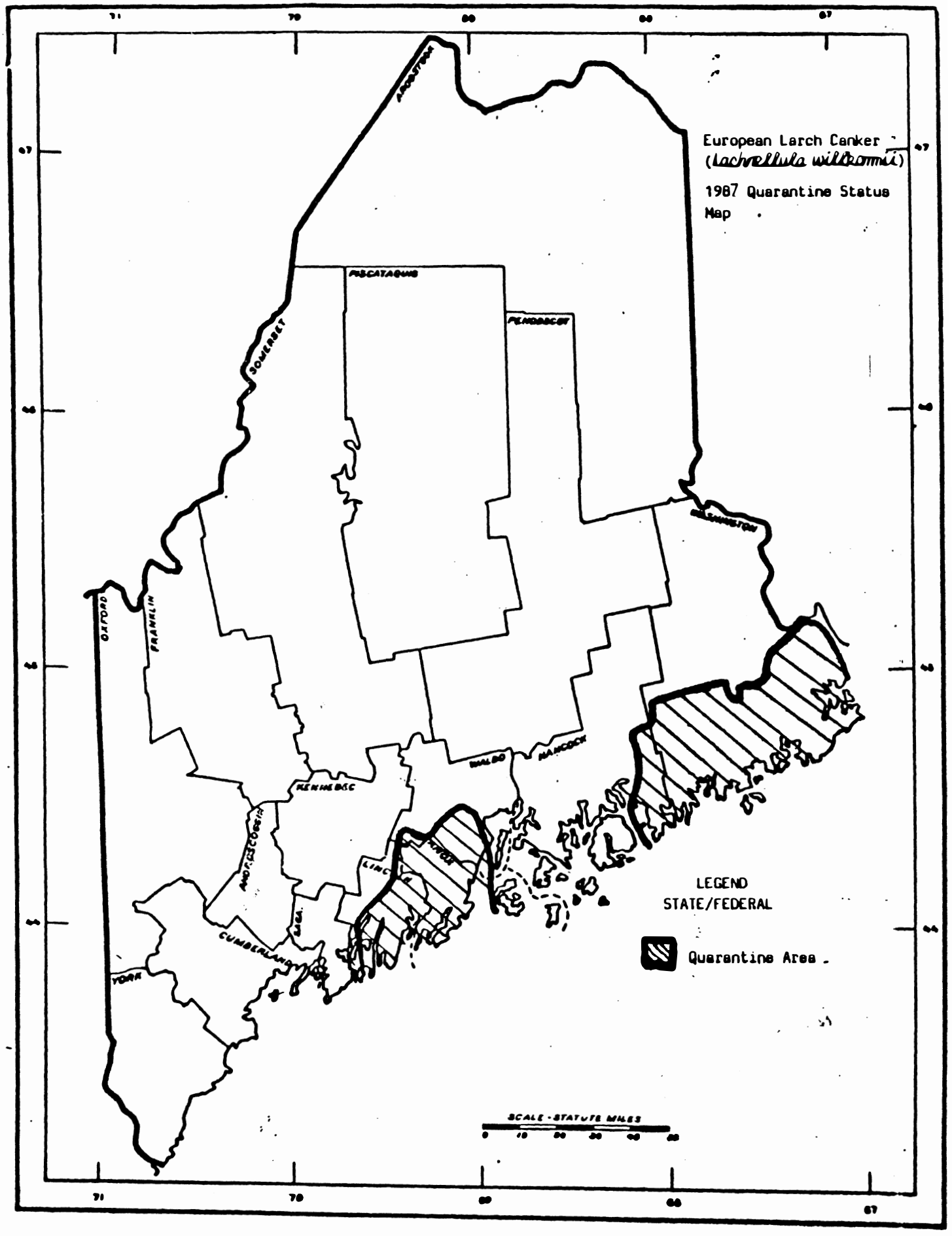
CONTROL PROJECTS - METHOD, MATERIAL, ACRES, COST, RESULTS:

State and Federal quarantines in effect and are being enforced. Compliance agreements allow direct movement of Larch from within the quarantined area to mill sites outside.

ADDITIONAL COMMENTS: Old (3 yrs. old or older) bark is being allowed to be shipped out of the mill site for mulch. New bark can only be moved from the mill site directly to a hog fuel- utilizing power plant elsewhere within the state, and cannot be diverted for use as landscape mulch.

No new infected townships were located in the August 1987 summer survey. The quarantine boundary thus remains the same as it existed in December, 1986.

MAINE


European Larch Canker
(Lachnellula willkommii)
1987 Quarantine Status
Map
AROOSTOOK
PISCATAQUIS
PENOBSCOT
SOMERSET
WASHINGTON
OXFORD
FRANKLIN
KENNEBEC
WALDO
HANCOCK
ANDROSCOGGIN
LINCOLN
KNOX
CUMBERLAND
SAG.
YORK
LEGEND
STATE/FEDERAL
Quarantine Area
SCALE - STATUTE MILES
0 10 20 30 40 50
71
70
69
68
67
47
46
45
44

STATE OF MAINE

1987 PEST CONDITIONS REPORT WORK SHEET

PEST (COMMON NAME): Jack Pine Needle Rust

(SPECIFIC NAME): *Coleosporium viburni*

HOST: Jack Pine
(Withe-Rod, *Viburnum cassinoides* is the common alternate host)

PRESENT CONDITION:

AREA - TOTAL ACRES: 62

LOCATION: Glenwood (Aroostook Co.); Howland (Penobscot Co.) and T19MD (Washington Co.)

SEVERITY - INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR INFECTION; DEFINE CLASSES: All 3 sites had heavy infection on lower branches of head-high trees.
Light = Not all needles on lower branches contain aecial pustules.
Moderate = All needles of lower branches contain few aecial pustules.
Heavy = All needles of lower branches with multiple aecial pustules.

LOSSES - INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR $ ESTIMATES: This disease could seriously retard growth of newly-established seedlings and saplings. Impact diminishes when trees get head-high and higher. No mortality observed so far in Maine.

TREND - CHANGES IN INCIDENCE AND SEVERITY OVER THE PAST FEW YEARS AND EXPECTATIONS FOR NEXT YEAR: This is a relative newcomer to Maine, but is increasing in incidence and severity. The alternate host plant commonly associated was withe-rod. Infection on this host was heavy, and affected leaves had turned red by the end of June. This was the uredial stage.

CONTROL PROJECTS - METHOD, MATERIAL, ACRES, COST, RESULTS: None anticipated except for possible herbicide spray of the viburnum hosts.

ADDITIONAL COMMENTS: Aecial stage (spore dispersal) was completed by the 3rd week in June. Uredial stage starts about this time.

STATE OF MAINE

1987 PEST CONDITIONS REPORT WORK SHEET

PEST (COMMON NAME): Naemacyclus Needlecast

(SPECIFIC NAME): *Cyclaneusma minus = Naemacyclus minor*

HOST: Scots pine

PRESENT CONDITION:

AREA - TOTAL ACRES: 40

LOCATION: Bucksport (Hancock Co.), Lincolnville, Searsmont (Waldo Co.), Skowhegan (Somerset Co.), Dover-Foxcroft (Piscataquis Co.), and Farmington (Franklin Co.).

SEVERITY - INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR INFECTION; DEFINE CLASSES: Light in Bucksport, Skowhegan and Bucksport. Medium in Dover-Foxcroft and Lincolnville Center, and heavy in Searsmont.
Light = On main stem needles only.
Medium = Main stem + 1 yr. of branch needles infected.
Heavy = Most 2nd yr. needles infected, and older needles have been cast.

LOSSES - INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR $ ESTIMATES:

No mortality, but degrade (Christmas trees). All locations cited are Christmas tree plantations.

TREND - CHANGES IN INCIDENCE AND SEVERITY OVER THE PAST FEW YEARS AND EXPECTATIONS FOR NEXT YEAR: Incidence is almost statewide now and probably will show up wherever Scots pine is grown. Growers are spraying with Bravo, mostly with good results. Those trying to economize (reduce number of applications) will suffer.

CONTROL PROJECTS - METHOD, MATERIAL, ACRES, COST, RESULTS: Most growers are now using Bravo in a preventive spray program. This adds to final cost; however, they will sell nothing without it; i.e., trees will be unmerchantible.

ADDITIONAL COMMENTS: For a "new" disease, how did it gain such widespread distribution in such a short period of time? How far do spores travel and remain viable? If no long-range spread, distribution may be through infected nursery stock, although this is merely speculation on my part at this time.

STATE OF MAINE

1987 PEST CONDITIONS REPORT WORK SHEET

PEST (COMMON NAME): Pine-Pine Gall Rust, Western GallRust, Woodgate Rust

(SPECIFIC NAME): *Endocronartium harknessii*

HOST: Scots Pine

PRESENT CONDITION:

AREA - TOTAL ACRES: 15 acres (1987)

LOCATION: Greenbush, Old Town (Penobscot Co.), Farmington (Franklin Co.), T19MD (Washington Co.), and Norridgewock (Somerset Co.)

SEVERITY - INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR INFECTION; DEFINE CLASSES: Light infection in Farmington (Christmas trees); moderate in T19MD and Norridgewock, and heavy in Old Town and Greenbush.
Light = Single, isolated galls found with difficulty.
Moderate = Many, scattered galls throughout crown.
Heavy = Multiple galls per branch; tree stunting and branch mortality occurring.

LOSSES - INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR $ ESTIMATES: The Old Town site has not been sanitized, but no mortality has occurred. The other sites have been sanitized, but latent infections continue to produce galls.

TREND - CHANGES IN INCIDENCE AND SEVERITY OVER THE PAST FEW YEARS AND EXPECTATIONS FOR NEXT YEAR: Incidence is increasing in older plantations due to the difficulty in detecting and sanitizing. Good results with sanitation can be achieved in Christmas tree plantations.

CONTROL PROJECTS - METHOD, MATERIAL, ACRES, COST, RESULTS: Sanitation and/or rogueing of affected trees effective in Christmas tree plantations, and can be accomplished in an incidental manner. Control in pole-sized and older stands is more difficult.

ADDITIONAL COMMENTS: Recommended a heavily-infected stand near a nursery be biomassed to protect susceptible seedlings. Also, recommended rogueing in a 1 acre pole/mature stand to protect 40 acres of jack pine saplings in a large plantation.

STATE OF MAINE

1987 PEST CONDITIONS REPORT WORK SHEET

PEST (COMMON NAME): Red Pine Needle Rust

(SPECIFIC NAME): *Coleosporium asterum = solidaginis*

HOST: Red Pine

PRESENT CONDITION:

AREA - TOTAL ACRES: 6

LOCATION: Augusta (Kennebec Co.) and Sidney (Kennebec Co.)

SEVERITY - INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR INFECTION; DEFINE CLASSES: Moderate in Augusta; heavy in Sidney.
Light = Not all needles on lower branches affected.
Moderate = All needles on lower branches contain few aecial pustules.
Heavy = All needles on lower branches contain multiple aecial pustules.

LOSSES - INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR $ ESTIMATES:
No mortality; some growth retardation.

TREND - CHANGES IN INCIDENCE AND SEVERITY OVER THE PAST FEW YEARS AND EXPECTATIONS FOR NEXT YEAR: Goldenrod nearby was heavily infected. Given favorable weather next spring, needle infection could be heavy.

CONTROL PROJECTS - METHOD, MATERIAL, ACRES, COST, RESULTS: None recorded. Recommend mowing by the end of May.

ADDITIONAL COMMENTS: Urediospores releasing 6/17 and aecial stage mostly gone by this date. Aecial production peaked around 6/8.

STATE OF MAINE

1987 PEST CONDITIONS REPORT WORK SHEET

PEST (COMMON NAME): Scleroderris Canker

(SPECIFIC NAME): (Ascocalyx = *Gremmeniella abietina*)

HOST: Red pine

PRESENT CONDITION:

AREA - TOTAL ACRES: Originally approximately 40 acres, most of which has been sanitized. A resurgence in 1987 on approximately 10 acres.

LOCATION: Eustis, Coplin Plt. (Franklin Co.), Aurora (Hancock Co.), and T19MD in Washington Co.

SEVERITY - INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR INFECTION; DEFINE CLASSES: Light infection (North American Strain) in Eustis; apparent eradication in Coplin Plt. (Intermediate Strain); light resurgence in sanitized areas of Aurora and T19MD.
Light = Occasional flags on lowermost whorl.
Moderate = Lowermost whorl mostly dead; flagging in next whorl.
Heavy = Two or more whorls of lower branches dead, flagging in next whorl.
Severe = Saplings killed; one half or more of crown killed on pole-sized and larger trees.

LOSSES - INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR $ ESTIMATES: The only mortality so far has been in overstocked, sapling stands in Eustis (North American Strain). The disease has thinned these thickets to a more desirable stocking level.

TREND - CHANGES IN INCIDENCE AND SEVERITY OVER THE PAST FEW YEARS AND EXPECTATIONS FOR NEXT YEAR: There have been no new sites detected in the past several years. Sanitized sites in Eustis, Coplin Plt., Aurora and T19MD appeared to have stabilized the disease; however, there appeared to be a slight resurgence detected in the Aurora and T19MD sites. These sites should be closely scrutinized in May-June of 1988, and any necessary sanitation conducted at this time.

CONTROL PROJECTS - METHOD, MATERIAL, ACRES, COST, RESULTS:
Minor sanitation work done in the spring of 1987 in the course of site examination. Symptomatic flags removed. This did not take more than 1/2 hour in each of the European strain sites.

ADDITIONAL COMMENTS: The winter of 1986-87 produced a much deeper accumulation of snow than we have had for several years, and reached 3 feet or more in many areas. Whether or not this had anything to do with the resurgence in Aurora and T19MD is pure speculation at this time.

I continue to expect to detect this disease in the Madawaska-Van Buren-Houlton areas because of the heavy planting of red pine in these areas in the past, and known incidence across the border in Canada. I checked out suspicious areas reported by our Foresters from these areas, but in every case, another cause for flagging was determined; e.g., porcupine damage, squirrels chewing cones off twigs, girdling wire, etc.

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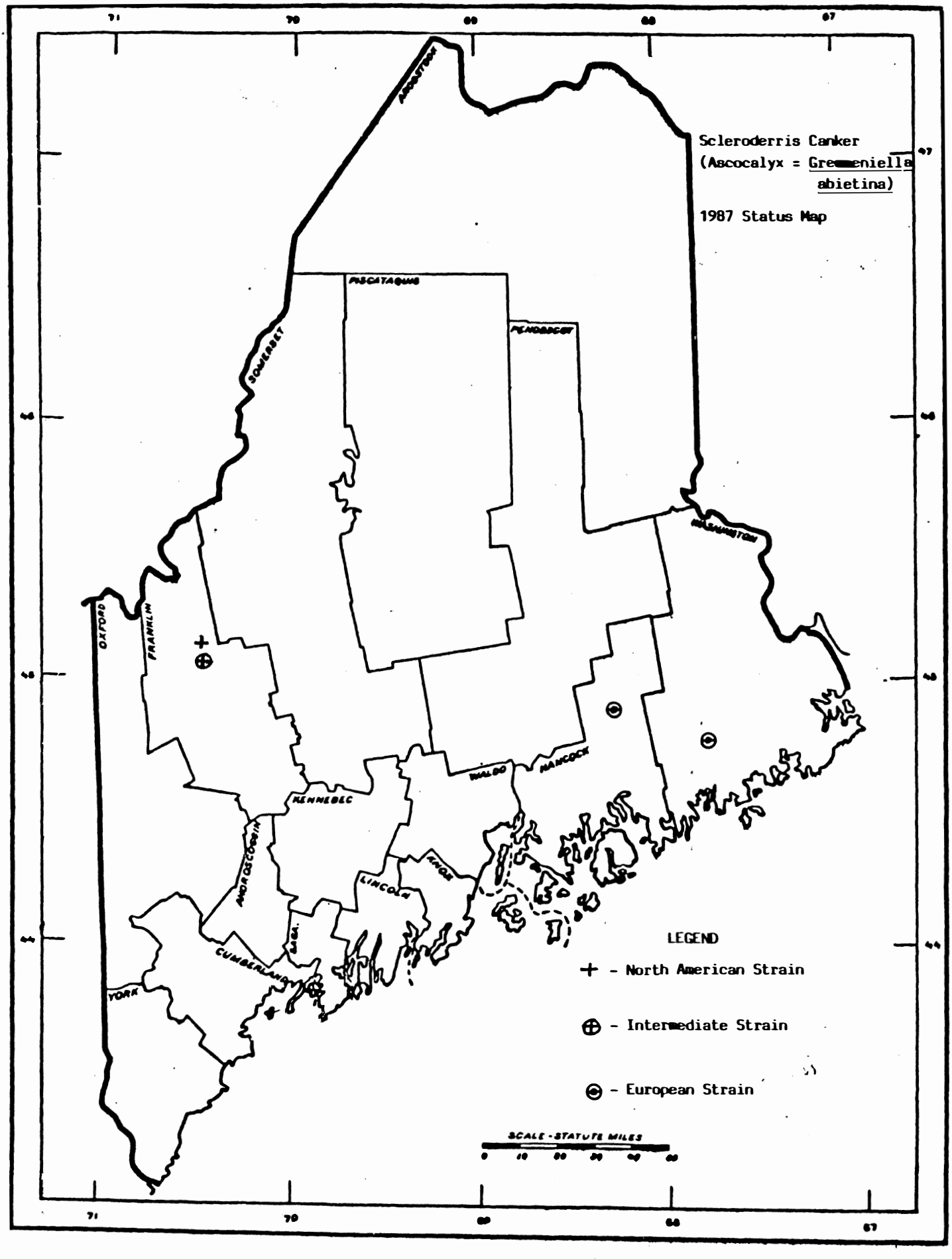
Scleroderris Canker
(Ascocalyx = Gremmeniella abietina)
1987 Status Map
AROOSTOOK
PISCATAQUIS
PENOBSCOT
SOMERSET
WASHINGTON
OXFORD
FRANKLIN
KENNEBEC
WALDO
HANCOCK
ANDROSCOGGIN
KNOX
LINCOLN
SAGA.
CUMBERLAND
YORK
LEGEND
+ - North American Strain
⊕ - Intermediate Strain
⊖ - European Strain
SCALE - STATUTE MILES
0 10 20 30 40 50
71
70
69
68
67
47
46
45
44

STATE OF MAINE

1987 PEST CONDITIONS REPORT WORK SHEET

PEST (COMMON NAME): Shoestring Root Rot

(SPECIFIC NAME): *Armillaria mellea*

HOST: Balsam fir, Norway maple, red and black oak, white ash, mixed growth

PRESENT CONDITION:

AREA - TOTAL ACRES: 20 acres of Balsam fir Christmas trees

LOCATION: Norridgewock (Somerset Co.) - See below.

SEVERITY - INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR INFECTION; DEFINE CLASSES: In Norridgewock, heavy infection on scattered trees.
Light = Trees green, callus growth around collar infection.
Moderate = Trees dull in color, shoot growth short.
Heavy = Trees yellow, shoot growth short, root collar mycelial fans easily detected.

LOSSES - INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR $ ESTIMATES: About 20 acres involved. Loss is from dead and chlorotic trees not saleable, or trees cut prematurely to avoid future losses. At $2.00 per foot, loss per acre for trees cut prematurely could be from 1,000-3,000+ per acre.

TREND - CHANGES IN INCIDENCE AND SEVERITY OVER THE PAST FEW YEARS AND EXPECTATIONS FOR NEXT YEAR: In this Norridgewock situation, the number of newly symptomatic trees has declined, and some trees are showing evidence of callusing over root collar infections. The infestation has stabilized and may decline from here on in.

CONTROL PROJECTS - METHOD, MATERIAL, ACRES, COST, RESULTS: Dr. Bill Livingston and Dr. Phil Wargo have established experimental plots in this town and have treated for rhizomorph control.

ADDITIONAL COMMENTS: The Norridgewock situation is a Christmas tree mgt. area established on an area clearcut of mixed growth, then planted to balsam fir.

The Norway maple was in Portland (single tree, roadside) injured by equipment.

The Aroostook Co. balsam fir were mature trees with wood road construction root injury or girdling roots and exhibiting Stillwell's Syndrome (Red fir). Affected trees had mycelial fans surrounding the root collar. The white ash in Athens and Canaan was growing very slowly because of the small crowns they contained. The New Gloucester red and black oak were attacked by Armillaria following gypsy moth defoliation stress from the past epidemic.

STATE OF MAINE

1987 PEST CONDITIONS REPORT WORK SHEET

PEST (COMMON NAME): Sirococcus Shoot Blight

(SPECIFIC NAME): *Sirococcus strobilinus*

HOST: Red Pine

PRESENT CONDITION:

AREA - TOTAL ACRES: Total estimated = 650. Approximately 50 new acres in 1987.

LOCATION: Only one new infection site in 1987 (Frye Mt., Montville). Previously infected sites are Jim Pond, Eustis, Gouldsboro, T19MD and Aurora Townships.

SEVERITY - INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR INFECTION; DEFINE CLASSES: Light infections in T19MD and Aurora; moderate infections at Eustis and Jim Pond; heavy infections at Gouldsboro and Montville.

Light = occasional flagging on 1-5% of twigs.
Moderate = Flagging on 6-25% of twigs.
Heavy = 26-90% flagging of twigs plus light mortality.
Severe = 90% or greater flagging of twigs, plus substantial mortality.

LOSSES - INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR $ ESTIMATES: Mortality of mature trees occurs only in Gouldsboro and Montville at this time. An estimated 200 Bd. ft. of Siroccus-caused mortality occurs at each of these sites. In both cases, affected trees are expected to be salvaged.

TREND - CHANGES IN INCIDENCE AND SEVERITY OVER THE PAST FEW YEARS AND EXPECTATIONS FOR NEXT YEAR: Incidence and severity appear to be increasing, but at a slow rate. This is a relatively new disease to foresters. With more familiarity with it, I expect more sanitation work in sapling and young pole-sized stands.

CONTROL PROJECTS - METHOD, MATERIAL, ACRES, COST, RESULTS: I have recommended sanitation in young stands in conjunction with removal of infected overstory, mature trees. I believe this has been done in Gouldsboro, and, since the Montville situation is a recently-diagnosed situation, no action has yet been taken, but is expected to be this winter.

ADDITIONAL COMMENTS: If more emphasis is given to survey detection work in plantations, I believe a greater incidence will be reported in the future.

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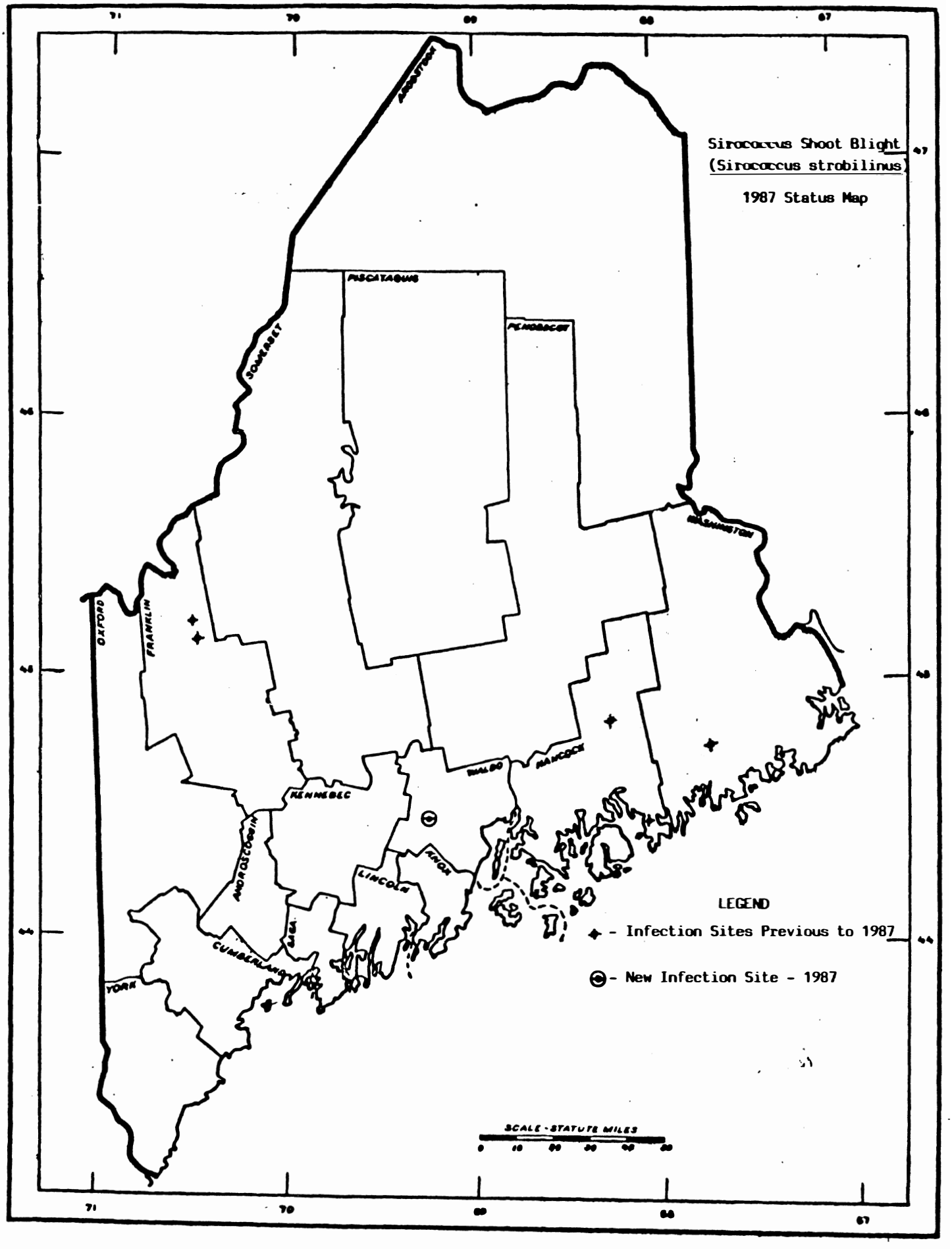
Sirococcus Shoot Blight
(Sirococcus strobilinus)
1987 Status Map
AROOSTOOK
PISCATAQUIS
PENOBSCOT
SOMERSET
WASHINGTON
OXFORD
FRANKLIN
KENNEBEC
WALDO
HANCOCK
ANDROSCOGGIN
KNOX
LINCOLN
SAG.
CUMBERLAND
YORK
LEGEND
- Infection Sites Previous to 1987
- New Infection Site - 1987
SCALE - STATUTE MILES
0 10 20 30 40 50
71
70
69
68
67
47
46
45
44

MAINE

1987 PEST CONDITIONS REPORT WORK SHEET

PEST - (COMMON NAME): White Pine Blister Rust (WPBR)

(SPECIFIC NAME): Cronartium ribicola

HOST: Eastern White Pine

PRESENT CONDITION:

AREA - TOTAL ACRES: 1,862,000 Acres within control area

LOCATION: - Central and Southwestern Maine

SEVERITY - INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR INFECTION; DEFINE CLASSES:

1,282,938 acres "greenlined", no control required
579,062 acres of moderate to heavy infection. These are acres requiring control efforts.

LOSSES - INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR $ ESTIMATES:

Special Survey →

Survey of white pine stands within and outside control area shows 3.8% and 9.1% incidence of infection, respectively. WPBR was responsible for 14% and 49% of dead trees inside and out respectively, recorded in this study.

TREND - CHANGES IN INCIDENCE AND SEVERITY OVER THE PAST FEW YEARS AND EXPECTATIONS FOR NEXT YEAR:

Overall incidence is not expected to dramatically increase in one year.

CONTROL PROJECTS - METHOD, MATERIAL, ACRES, COST, RESULTS:

Total town projects Ribes spp. erradication, Tordon RTU or 101R, 121 acres - $3,500.00 total cost.
Incidence control and scouting in 1987 covered 40,785 Acres cost $13,850.00.

ADDITIONAL COMMENTS:

MFS conducted a survey in 1987 to assess the incidence of blister rust infection in areas of Ribes control and in areas of non control and found 3.8% and 9.1%, respectively of infected pine.

WEATHER DAMAGE IN MAINE - 1987

Lightning - Two cases of lightning strikes killing large white pine were observed in Naples and Green. In addition to the splintering associated with the prime target, adjacent trees, up to a radius of about 75 feet were also affected to varing degrees. This included mortality, and heavy, mid-crown pitching associated with upper crown mortality above the site of the pitching. The Naples site was lakeshore; the Greene site was riverside with exposed ledge. Bark beetles were active in dead and moribund trees.

Winter Injury - Tops of white oak saplings in Gray started to push out leaves in the spring, then died. Epicormic branching followed and was common-place.

Pin oak in Waterville and Sidney had the top 8-10' of 8-10" Dbh trees killed. Some delayed leaf emergence was associated, and sprouts had developed from heavy wood by late June. Trees most seriously affected had snow piled against them from the south side. Could reflectance have been a contributing factor; i.e., premature activation of the cambium?

The tops of highbush blueberry exposed above a deep accumulation of snow were completely killed in Brunswick, as were tops of 15' high honey-locusts in South Portland. Vigorous sprouts developed from heavy wood of the honeylocusts. Topkill was localized, and did not occur uniformly throughout the city.

An entire block of ornamental, fall-planted juniper died in Lewiston. No other explanation could be found for the cause of mortality except for possible reflectance from a light-colored structure. This was a south-facing 45° slope planting.

Hail Injury - A balsam fir/hardwood stand in a localized area in Frenchville sustained hail injury by "stones" that must have been marble-sized. Fir in the open showed conspicuous brown flagging in early August. Other species showed typical hail wounds on the upper sides of branches.

In North Cutler, hail damage in a localized area was reported to have a detrimental effect on blueberry production.

Late Frost Injury - A 5 acre balsam fir Christmas tree plantation in Skowhegan had many unbroken buds. The cause was diagnosed as late frost injury in frost pockets.

ANIMAL/BIRD DAMAGE IN MAINE - 1987

Bear Damage - Young bear cubs elarning to climb young red pine 8-10' high caused slanting and vertical longitudinal wounds in the internodal area, and caused top and limb breakage. Fine, black hairs found on broken branch stubs were confirmed by a game biologist to be those of young black bear. Damage was confined to a 1 acre portion of the plantation.

Porcupine Damage - In Nobleboro, 20-30 8 foot sheared balsam fir scheduled for the 1987 Christmas tree market were partially to completely de-limbed by porcupine(s). Branches up to 1/2" in diameter were chewed off 2-3" from the stem. In the worst case situations, only the lowermost branches and a small tuft at the tip remained. At $2.00 per foot wholesale value, the loss of 25 8-foot trees would be around $400.

Pole sized red pine next to a barn in Aroostook Co. were girdled by porcupine feeding. Damage extended over a 1 acre area. Similar damage to occasional white pine in a 1 acre area in Casco was also observed.

Squirrel Injury - Flagging, caused by squirrels chewing off red pine cones, was observed in an Aroostook plantation.

Sapsucker Injury - Scots and red pine, Japanese larch and various hardwoods were observed with the typical cribbage-board pattern of damage in the towns of Belgrade, Industry, Casco and Vassalboro. One mature red pine in Belgrade appeared to have been killed as a result of two 6"x18" sections of injury.

ABIOTIC DISEASES IN MAINE - 1987

Maple Leaf Search - An isolated case of marginal leaf browning on maple shade tree leaves in Searsport may have been due to an associated girdling root problem.

Girdling Roots - Dieback in many roadside and ornamental shade trees, particularly Norway maple and linden, is believed to be the result of severe girdling root problems in many instances. Such problems were observed on Norway maple in Portland, and linden and other hardwood species in the Lewiston-Auburn area.

White Pine Chlorosis - White pines in a 25-acre median and right-of-way strip at mile 196, I-95 were noticeably chlorotic. A rise in the water table around these established trees following construction of this highway is believed to be indirectly responsible.

Herbicide Injury - Careless use of Roundup herbicide around ornamental Bar Harbor and Andorra juniper in Bangor caused severe browning. Wick application of Fusilate or Poast herbicide was offered as a possible substitute to avoid damage to these fairly expensive landscape plants. Possible cumulative effects of excessive Simazine herbicide applications to balsam fir Christmas trees over a period of several years may have been responsible for spotty branch chlorosis and premature needle cast. This problem is expected to continue or even increase until more is learned about successive,excessive herbicide applications, and what variable effects are to be expected with variations in pH, soil type, organic matter content, and other factors.

REGENERATION PROBLEMS IN MAINE - 1987

Poor Seedling Survival - Approximately 40 acres of fall-planted, bare root white and red pine seedlings planted in the Naples, South Paris and Hebron areas suffered a 50-95% loss. Some of this acreage was hand planted by experienced crews. In one of these white pine plantings, seedlings had been inundated by spring floods and appeared to have 95% mortality. When viewed 2 weeks later, about 45% had pushed out new, vigorous, green shoots.

Survival of fall-planted stock normally is not as high as for spring-planted stock; however, such a high rate of loss is believed due to other contributing factors, such as weather, and handling/packaging.

Balsam fir tubeling stock transplanted in a 10-acre field for Christmas trees suffered about 10% mortality. Herbicide injury and root distortion associated with plug stock were believed to be contributing factors. Improper closure of the planting slit would allow herbicides to penetrate to the root zone and cause the injury observed.

See also "*Armillaria mellea*."

MISCELLANEOUS DISEASES AND PROBLEMS IN MAINE - 1987

American Chestnut/Chestnut Blight (Endothia parasitica) - In West Bethel, a 14" Dbh tree contained many green burs when observed on September 2 on land owned by Chadburn Lumber Co. A nearby 15" Dbh tree showed evidence of only having produced pollen; i.e., there were no expended burs beneath the tree, and no green burs born on its crown. Both were healthy.

One 9" Dbh tree in this immediate vicinity was dead of undetermined cause, and another of the same diameter contained a dead top resulting from heavy sapsucker injury. Four healthy young saplings were observed about 100 yards from the larger trees.

A large, 16" Dbh tree was reported by Austin Gorham from the Buxton/Saco area (Joy Valley Road). The tree's condition has not yet been evaluated.

Hypovirulent strain inoculations into cankered trees on the Harkness Preserve, Rockport by the University of Maine, Orono appeared to be resulting in development of callus growth at the edge of the cankers. Contact the Department of Botany and Plant Pathology in Orono for additional details.

Approximately 30 American chestnuts were planted along the fairways of the Rockport golf course by Consulting Forester, Wells Thurber. Trees generally appear to be doing well despite some minor foliage insect problems. Such a report is encouraging because this species is too good and too valuable a tree to be perpetually pushed back into oblivion because of the blight problem.

A few green burs were produced on young sapling trees at the Hebron seed orchard, but seeds were not viable, possibly due to no or insufficient pollen being produced on this site. Viable nuts were collected from Livermore and the large trees at the Augusta Lab. They (117) were stratified in sphagnum and stored in the refrigerator on October 9 until they start to germinate in the spring at which time they will be planted.

Several requests were received during the past year for information on the culture of chestnuts.

Ash Anthracnose (Gloeosporium aridum or Discula sp.) - In Waterville at the Colby campus, premature abscission of leaflets occurred in early/mid June, but had ceased by the end of the month. One eighth to 1/4 of remaining leaflets were browed as a result of infection, and acervuli were plentiful on the underside of affected leaflets.

Biological Control (?) - On June 17, black beetle larvae, possibly of the species Trirhabda canadensis were observed feeding in Augusta on goldenrod leaves which were heavily infected with the uredial stage of Coleosporium asterum = solidaginis. Nearby red pine had been moderately infected with the aecial stage of this fungus earlier in the season.

Concolor Fir Needle Blight (Cause undetermined) - This disease causes affected trees to be unmarketable in the Christmas tree trade.

Douglas-fir Needlecasts (Rhabdocline pseudotsugae and Phaeocryptopus gaeumannii = Adelopus gaumanni) - Rhabdocline needlecast was just starting in several, small, young plantations in Bucksport. No Swiss needlecast (P. gaeumannii) was observed, although the two needlecasts commonly occur together. Light infestations of Rhabdocline needlecast was also observed in a one-acre plantation in Skowhegan. The disease now occurs virtually everywhere in the state. Heavy infections in North Windham (species not specified) were causing trees to appear thin and unmerchantible in the Christmas tree trade.

Fir Needle Rust (Various species) - Needle rust was light in Sumner. Except for hard pine rusts (Coleosporium ssp. and Cronartium comptoniae) rust incidence was generally at a low level in 1987.

Herbicide Use (Balsam Fir Culture) - Velpar was used effectively and without damage for grass and weed control in an operation combining production of Christmas trees and blueberries in Lincolnville Center. Apparently, when used responsibly and with care, damage to balsam fir does not occur. Treated trees appeared greener than untreated trees, and neither group had been fertilized.

Larch Decline - Decline and mortality of mature trees was commonplace along the Spurwink River from South Portland to Higgins Beach. Hundreds of trees are already dead, and mortality is starting in the younger age classes.

Heavy mortality also occurred in Coopers Mills, Jefferson, Waldoboro, Warren, Union, Washington and Somerville, and live, but declining chlorotic and moribund trees may be seen among the dead trees. There appears to be a difference from the Maritime Provinces situation, which reportedly is improving there.

One tree was observed dying from the lower crown; the upper crown appeared green and healthy.

Poisonous Plants - Two requests from local hospitals asked for information on the poisonous attributes (if any) of wintergreen (checkerberry) fruit and black locust seeds. Wintergreen fruit are edible and not poisonous, while black locust seeds are inedible and poisonous. (See "Poisonous Plants of the U.S. and Canada" by John M. Kingsbury in the Insect & Disease Lab library).

Poplar Ink Spot (Ciborinia whetzelii) - Typical 1/4" diameter oval spots (sclerotia) were just starting to appear on trembling aspen on June 23 in Howland. Affected leaves had started to turn brown on this date. Incidence and severity were both low for this problem in 1987.

Poplar Shoot Blight (Venturia tremulae) - Occasional shoots of trembling aspen in Howland were observed to show the blackened shoots and leaves and the shephard's crook symptom associated with this disease. The infestation was light and incidence was unreported elsewhere. The conidial stage is Pollacia radiosa.

Septobasidium/Matsucoccus Complex (Septobasidium pinicola and Matsucoccus macrocicatrices) - Extremely heavy pitching from beneath nodal and internodal Septobasidium mats was observed in a Belgrade pole-sized white pine stand. Basal area had been 200+ and was thinned in 1986. Delayed thinning helps tree form of trees attacked by the white pine weevil, but may encourage a buildup of the Septobasidium/Matsucoccus complex.

A similar situation existed in a 15 acre pole-sized white pine stand in Coopers Mills, where Septobasidium mats were large and numerous. Basal area was between 220-240, and should have been between 100-110. A further indication of stagnation/overstocking was presence of the pine bark aphid.

Silt on Seedlings - Unusually heavy spring flooding of the Saco River inundated most of the Western Maine Nursery in Fryeburg, and resulted in seedlings in the seedbeds being covered with a thick film of silt. One suggested remedy was to devise a piece of equipment using soft-bristled car-wash rollers and run this over the beds both ways when the seedlings were thoroughly dry; however, the idea was never implemented.

Spruce Tumor - Tumors as large as a beach ball (usually one per tree) were reported in a stand of mixed growth on a poorly drained site off River Road in Bucksport. Another stand on Preble Hill, west-central Garland, about 10 acres in size, contained multiple tumors per tree, with tumors occurring on roots, bole, twigs, and branches well into the upper crown. Tumor size ranged from marble size on small branches to some larger than a basketball. Inland reports of tumors on spruce are exceedingly rare, usually being found along the immediate coast. Coastal observations included those on Squirrel and Monhegan Islands, and Liniken Neck, Boothbay Harbor.

Strumella Canker (Conoplea globosa = Strumella coryneoidea) - Scattered infected trees were observed in New Gloucester in an area previously hard-hit by gypsy moth defoliation. Killed and Strumella-infected red and black oak trees were being removed in a firewood/salvage operation.

Another infection site was observed in Casco, where incidence averaged one canker per acre, or approximately 1% of oaks in the area.

Sweet-fern Blister Rust (Cronartium comptoniae) - Plantations of lodgepole and Ponderosa pine that were established several years ago next to Burnt Land Lake in T35 MD have been virtually wiped out by this disease. The scattered, living, surviving saplings are heavily cankered, and they too are expected to succumb in a year or two.

White Pine Blister Rust (Cronartium ribicola) - Several requests were received this year for informaiton concerning our Ribes Quarantine, which is still in force. Mail order houses with catalogs not citing our quarantine have been advised and sent a list of towns to which Ribes species, other than Ribes nigrum and its hybrids or varieties, may be shipped.

The Consort hybrid, a black currant, is reportedly immune to C. ribicola; however, one parent is R. nigrum. Since it is self-fertile, progeny produced when it is selfed will be 25% R. nigrum. R. nigrum plus this hybrid, along with other hybrids and varieties of R. nigrum are not allowed to be introduced anywhere within the State of Maine.

Yellow Witches'-Broom or Broom Rust of Fir (Melampsorella caryophyllacearum = cerastii) - In Farmington, only two trees being grown for the Christmas tree trade in 5 acres of plantation were affected; one being a stem canker.

The brooming problem in a Dover-Foxcroft Christmas tree operation continues to be the worst case situation in the state, despite implementation of an annual pruning program.